

# THE EMBRACEMENT OF RISKS. HOW TO MAKE SENSE OF 'RESILIENCE' FOR PUBLIC AND INDUSTRIAL SAFETY?

Dr. Juul Gooren  
The Hague University of Applied Sciences  
Johanna Westerdijkplein 75  
2521 EN The Hague, The Netherlands  
[icwgooren@hhs.nl](mailto:icwgooren@hhs.nl)

## Abstract

This paper will apply a generic definition of resilience ('the capacity of a system, enterprise, or a person to maintain its core purpose and integrity in the face of dramatically changed circumstances') to public and industrial safety. What can resilience teach us in terms of safety and security management? The avoidance of risk to ensure safety and security should not be the primary goal of a community or an organisation because that could undermine the primary processes of living in a community or working for an organisation. Safety and security is something that often develops indirectly as a result of involvement. It is under these conditions that a community or organisation will be more resilient. The prescription of 'simple, local and diverse' resonates as a response to the state-centred view on public safety and the tightly coupled and complex system in industrial safety. In order to be flexible resilience is sceptical of a central and hierarchical organization of safety and security. Furthermore resilience does not shy away from risk because risks offer all kinds of opportunities and gains. The purpose of this paper is to connect recent talk about building resilient communities with the work of resilience engineering.

“the capacity of a system, enterprise, or a person to maintain its core purpose and integrity in the face of dramatically changed circumstances (Zolli & Healy, 2012, p.7)”

## INTRODUCTION

The notion of resilience seems popular these days (Comfort, Boin & Demchak, 2010; Ungar, 2012; Kent, Davis & Reich, 2014). Lentzos & Rose (2009, p.242) argue: “Initially an act of rebounding, recoiling or springing back: in the nineteenth century the term became applied to the capacity of a property or a structure to regain its initial shape after compression, and then, later, to the mental state of being able to withstand stress or adverse circumstances or to recover quickly from their effects, and, later still, to the capacity of systems, structures or organizations to resist being affected by shock or disaster, and to recover quickly from such events. Significantly, resilience, today, has become something that can be engineered into systems, organizations, perhaps nations and persons.” One could apply this thinking to New York in the immediate aftermath of the 9/11 attacks when ordinary people started helping each other on the street (Molotch, 2012). It is also applicable to Wal-Mart which was fully operational after only one week in the areas hit by Hurricane Katrina (Tabot & Jakeman, 2009). In both cases whether it is laymen offering emergency assistance or alternative supply routes we are dealing with resilience for it signifies an “intentional stance of both fluidity (of strategies, structures and actions) and fixedness (of values and purpose) (Zolli & Healy, 2012, p.259-260)”. See also Boutellier (2011) on the importance of improvisation bottom up in the delivery of safety and security.

I would like to apply resilience as a conceptual tool to understand the management of safety and security in the world of public and industrial safety. How can one improve the resilience of communities and organizations facing adversity? In dealing with risks I will elaborate on resilience as a different framework compared to on the one hand cost-benefit analysis and on the other hand precaution (Sunstein, 2005; Pieterman, 2009; Ball & Ball-King, 2011). In all its complexity the future is highly unpredictable and all the more due to interventions with unforeseen side effects (De Mul, 2014). The logic of resilience seems to be a fundamental preparedness no matter what (Weick & Sutcliffe, 2007). In order to locate this more recent approach in terms of interventions for safety and security problems I will draw on the safety and security management chain (Liebregts, 2011). Where to place resilience compared to well-known notions such as prevention and repression (O'Malley, 2010, 2011; Walklate, 2011; Walklate, Mythen & McGarry, 2012)? If resilience is a new approach in dealing with risks I am interested in the qualitative difference.

## RESILIENCE

There seems to be a recurring set of elements explaining how certain systems are more resilient than others being too complex, concentrated and homogeneous (Zolli & Healy, 2012; Ungar, 2012; Kent, Davis & Reich, 2014). The most important elements often brought up are modularity, feedback and diversity. 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 little problems that have yet to become big. Diversity refers to the number of connections between stakeholders with a number of functions. The beauty but also problem of this framework 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 complement one another in all kinds of ways (diversity). A marriage can moreover change over time since it is possible that two lovers will eventually start a family and take up the role of parents alongside that other role of being romantic partners. The possibility to adjust and remain together implies upholding ‘core purpose and integrity’. Think of a sports team with its inherent capacity to change the game plan during a match whenever being outclassed by an adversary. From a holistic point of view every player has its distinct role to play (modularity) and during a match one can often detect that things might turn out in a defeat 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 resilient there are thus three important requirements. There must be autonomous subsystems, there is the ability to gather first hand data and difference is welcomed 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 for the immediate environment can always turn into a hostile one.

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 as resilience in its focus on diverse and autonomous components or parts which are interrelated, interdependent, linked through many (dense) interconnections and behave as a unified whole in learning from experience and in adjusting (not just reacting) to changes in the environment (Holland, 2005). With resilience we are not dealing with closure and protection for that will lead to homogeneity and paralysis. Resilient systems are much more open and dynamic and do not strive for homeostasis for they welcome change in the name of preservation. A resilient stance might require transformation. In similar vein Sennet (unknown, p.8) writes: "The boundary is an edge where things end; the border is an edge where difference groups interact. At borders, organisms become more inter-active, 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 we can translate bio-diversity into socio-diversity thus replacing ecology with sociology. In resilient cities we typically find creativity and prosperity due to a mixed demographic and the possibility of encountering strangers leading to unexpected outcomes we tend to label as innovation. Following Ungar, (2012, p.27) "compensatory, promotive and protective processes contribute most to successful coping when individuals, families and communities face significant exposure to adversity." The logic of resilience advocates adaptation in addition to mitigation. It ultimately boils down to getting out of a comfort zone. Perhaps one can compare this to the effects of stress on the human body which is beneficial for health and safety for it is crucial considering the fight-flight response.

## SAFETY AND SECURITY

Public safety is basically about living together as citizens. Crime and nuisance can be a problem for a community. Industrial safety is basically what organizations have to do in order to make sure that employees return home safely. In every type of organization accidents can happen because of work processes and human error. How to address both types of safety and security problems from a resilience point of view? The idea of liveability and productivity can be understood as the respective 'core purpose and integrity' of a community and an organization. The avoidance of risk to ensure safety and security should not be the primary goal of a community or an organisation because that could undermine the primary processes of living in a community or working for an organisation. Safety and security is something that often develops indirectly as a result of involvement (Crawford & Evans, 2012; Woods, 2006). Numerous authors argue that humans are innately capable of cooperation (De Waal, 2011; Sennett, 2012; Schuilenburg, Van Steden & Oude Breuil, 2014). It is under such conditions that a community or organisation will be more resilient. The success of responding to problems is very much dependent on social capital in the form of 'bonding', 'bridging' and 'linking' (Putnam, 2000). In the research I am now conducting I am most interested in 'linking' as "the extent to which individuals build relationships with institutions and individuals who have relative power over them (Hawkins & Maurer, 2010)". The notion of resilience seems to suggest more participation by residents and more opportunities for employee discretion might be the answer to safety and security problems. I believe a community police officer and a line manager could learn from one another in how to change human behaviour and create conditions to do so. My current study deals with the way these professionals work (Raaf, 2015). What both have in common is that they rely on those who are not professionally tasked with safety and security but who are nonetheless crucial considering their active role in the primary process. By focusing on active citizenship in a community and safety culture within an organisation I would like to discover how increasing resilience would work to promote safety and security within both communities and organisations.

If resilience is very much about cooperation than trust is crucial. Without trust there will be too much distance between the police and the residents and the same goes for higher management using a command and control layout for employees (Verhaege, 2015). It is this distance that will undermine the effective management of risk for there will be less exchange of information. Once exchange is no longer operative residents tend to withdraw from public space and employees tend to cover up faults (Jacobs, 1960; Heck, 2011). The archetypical example for living is the gated community making spontaneous encounters less likely (Sennett, unknown). A cubicle in which employees work dividedly on a joint project would be the archetypical example for working (Sennett, 2012). A closed off community or organization is vulnerable because of the limited amount of external contacts that might be necessary to solve problems. Whenever people are separated this is detrimental to involvement. The gated community and the cubicle resemble closed systems whereas resilience requires an open system. Just like active citizenship (Tonkens, Trappenburg, Hurenkamp & Schmidt, 2015) is about the meaningful and necessary immersion of residents, a mature safety culture

(Hudson, 2007) is about employees carrying out what they know has to be done, not because they have to but because they want to. For the management of safety and security this means being sensitive to the primary process and involving the concerns of those affected. The 'simple, local and diverse' (Zolli & Healy, 2012, p.59-60) resonates as a response to the state-centred view on public safety and the tightly coupled and complex system in industrial safety. In order to be flexible, the logic of resilience is sceptical of a central and hierarchical organization of safety and security. In the case of public safety it is residents who have to perform social control and inform authorities. In the case of industrial safety it is employees who have to perform situational awareness and report near misses. It is this facilitation that resilience seems to promise.

In my research I will translate a resilient management of risk as the use of local knowledge and experience and the involvement of as many relevant stakeholders as possible resulting in safety and security serving a common interest. In a similar fashion as cost-benefit analysis resilience understands the management of risks as a trade-off (Hollnagel, 2009). Resilience is about balancing these trade-offs in order to reach an optimal result. The primary process should not be undermined by safety and security problems nor by the organization of safety and security. Here I am reminded of the school-to-prison pipeline exemplifying the 'securitization' (Zedner, 2009) of schools thereby overriding the goal of education because of zero tolerance policies and the presence of police (see Wacquant, 2001). In terms of resilience this means that safety and security authorities should respect the primary process of the social system in question. The best way to do that is to cooperate with the primary stakeholders such as residents and employees. More participation by residents relates to active citizenship. From a public safety perspective I have explored the function and organisation of neighbourhood watch groups which is a nice manifestation of residents exercising social control and informing authorities. These initiatives from and by citizens are aimed at decreasing crime and improve communities because of greater involvement. More opportunities for employee discretion relates to a mature safety culture. From an industrial safety perspective I will explore the work processes in an organization. Is the overall set up appropriate for employees exercising situational awareness and reporting near misses? Every employee can be exposed to risks and needs to report these if deemed substantial. By communicating information about the possible emergence of incidents more broadly the likelihood of risks materializing will diminish. In order to achieve this it is important that employees gain insight into their own work as it affects the work of others as well as the overall objectives of the organization.

## APPLYING RESILIENCE

For all kinds of reasons the state's monopoly of security is being dispersed among various non-state actors. This relates to the market and to the community. In similar vein the management's monopoly of safety is being dispersed among lower level actors at the strategic, tactic and most importantly operational level who are more and more made responsible for safety and security management. Whether it is public or industrial safety the logic of resilience favors a bottom-up approach incorporating local knowledge and experience. On top of that resilience assumes that disturbances should not only be mitigated but also used in a productive way in that one needs to adapt.

In his classic study on searching for safety Wildavsky (1988) makes a distinction between anticipation and resilience. The former is about preventing danger not yet materialized (mitigation) whereas the latter is about dealing with danger (adaptation). This shift is clearly detectable in thinking about terrorist attacks post 9/11. No longer do authorities promise that such an event will not happen. Intelligence agencies do not have enough information or have too much information and cannot make sense of it. The question is not if, but where and when. The logic of resilience does not so much amount to intelligence agencies tracing the bad guy before he sets off a bomb (mitigation) but more importantly citizens reclaiming the streets after the bomb has exploded (adaptation). "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 & Healy, 2012, p.5)." To continue operating under adverse conditions and circumstances refers to the 'core purpose and integrity' of a social system. In the case of international security and terrorist attacks that implies a curfew is perhaps a defeat for it undermines the liberty which is constitutive of being a US citizen. For industrial safety and accidents it is a defeat whenever a factory is completely shut down for this is rather inefficient when it comes to production. Finally whenever dealing with public safety and crime it is a defeat once gentrification leads to areas which are no longer lively in the sense that people from various backgrounds interact with one another. What these three examples have in common is that resilience is about tolerating a certain degree of

risk that comes from living in an open democracy under the rule of law (international security), running a factory (industrial safety) and living in a diverse neighborhood (public safety). Moreover resilience argues one can learn from disturbances in that one needs to politicize conflicts (the field of human security), learn from mistakes (the field of resilience engineering) and value conflicts (the field of positive criminology). It urges safety and security managers to broaden their scope and be attentive to the respective primary processes that can actually benefit from disturbances. These can improve the overall quality of the social system. In the spirit of complex adaptive system theory Dekker (2006) argues 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 in the case of building resilient neighborhoods requiring conflicts as a means to strengthen norms and values (Christie, 1977).

I would like to argue resilience emphasizes the stages of pro-action and after-care as it is understood in the safety and security management chain. How to take away root causes and how quickly is it possible to return to 'normal'? The chain of safety and security management consists of five stages in order to intervene in situations defined as risk (Liebregts, 2011). *Pro-action* implies taking away structural conditions with the aim of eliminating certain risks altogether. Think about the investment in education so youngsters follow the right path or on a different note replacing a dangerous machine 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. Think about stop and search policies and the placing of smoke alarms. Any intervention to stop and end an unsafe situation would qualify as *repression*. Think about a police arrest or extinguishing a fire. Another stage is *preparation* and that is basically the act of planning in case things go wrong. Think about scenarios related to riots or a fire drill. *After-care* finally is basically aimed at activities that will lead to reinvigorating the primary process. It implies getting better out of an adverse situation for lessons can be learned that can serve to enhance the subsequent stages. It is then that we have come full circle in applying the safety and security management chain.

#### CODA

Resilience should be understood as the capacity to deal with distinct events as well as latent processes for both are usually interrelated. Regarding distinct events like a riot (public safety) and an explosion (industrial safety) resilience is more about after-care whereas pro-action is more relevant in the case of latent processes such as ethnic tensions (public safety) and poor housekeeping (industrial safety) ultimately leading to these aforementioned distinct events. For me resilience is thus not only about 1) speedy recovery, 2) severe disturbances and 3) the capacity to remain functioning as Comfort, Boin & Demchak (2010, p.8) put it. It also includes 1) timely adaptation, 2) little disturbances and 3) the capacity to transform functions (ibid.). It implies there must be sensors in place that function as early warning signals that something is going wrong. From a resilience point of view trust and cooperation (Zolli & Healy, 2012) is something that is crucial in order to bounce back after a shock but should already be in place before the actual shock happened. It is something that should originate organically through social capital (Molotch, 2011; Waal, 2011) serving inclusive purposes and indirectly befitting the purpose of safety and security. From an empirical point of view resilience promotes a bottom up approach whereby those most closest to the primary process are able to 'row' and more importantly 'steer' (Wood & Shearing, 2007).

## REFERENCES

- Boutellier, H. (2011). *De improvisatiemaatschappij. Over de sociale ordening van een onbegrensde wereld*. Den Haag: Boom Lemma uitgevers.
- Christie, N. (1977). Conflicts as Property. *British Journal of Criminology*, 17, 1-19.
- Comfort, L.K., Boin, A. & Demchak, C.C. (2010). *Designing resilience. Preparing for extreme events*. Pittsburgh: University of Pittsburgh Press.
- Crawford, A. & Evans, K. (2012). Crime Prevention and Community Safety. In: M. Maguire, R. Morgan, & R. Reiner (eds.), *Oxford Handbook of Criminology*. Oxford: Oxford University Press, 769-805.
- Dekker, S. (2006). *The Field Guide to Understanding Human Error*. Hampshire: Ashgate Publishing Limited.
- Hawkins, R.L. & Maurer, K. (2010). Bonding, Bridging and Linking: How Social Capital Operated in New Orleans following Hurricane Katrina. *British Journal of Social Work*, 40, 1777-1793.
- Heck, M. (2011). Arbeidsveiligheid. In: W. Stol, C. Tielenburg, W. Rodenhuis, S. Pleysier & J. Timmer (red.), *Basisboek Integrale Veiligheid*. Den Haag: Boom Lemma uitgevers, 343-356.
- Hollnagel, E. (2009). *The ETTO Principle: Efficiency-Thoroughness Trade-off*. Hampshire: Ashgate.
- Hudson, P. (2007). Implementing a safety culture in a major multi-national. *Safety Science*, 45, 697-722.
- Jacobs, J. (1961). *The Death and Life of Great American Cities*. New York: Vintage Books.
- Kent, M., Davis, M.C. & Reich, J.W. (2014). *The resilience handbook: Approaches to stress and trauma*. New York: Routledge.
- Lentzos, F. & Rose, N. (2009). Governing insecurity: contingency planning, protection, resilience. *Economy and Society*, 38, 230-254.
- Liebregts, J. (2011). De ketenbenadering. In: W. Stol, C. Tielenburg, W. Rodenhuis, S. Pleysier & J. Timmer (red.), *Basisboek Integrale Veiligheid*. Den Haag: Boom Lemma uitgevers, 57-71.
- Molotch, H. (2012). *Against Security. How We Go Wrong at Airports, Subways and Other Sites of Ambiguous Danger*. Jersey: Princeton University Press.
- Mul, J. de (2014). *Domesticatie van het noodlot*. Rotterdam: Lemniscaat.
- O'Malley, P. (2010). Resilient subjects: Uncertainty, warfare and liberalism. *Economy and Society*, 39(4), 488-509.
- O'Malley, P. (2011). Security after Risk: Security strategies for governing extreme Uncertainty. *Current Issues in Criminal Justice*, 23(1), 5-16.
- Pieterman, R. (2008). *De verzorgcultuur. Streven naar veiligheid in een wereld vol risico en onzekerheid*. Den Haag: Boom Juridische Uitgevers.
- Putnam, R. (2000). *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.
- Raaf, H. (2015). *Voor de goede orde. Handhaven van wetten en regels*. Bussum: Uitgeverij Coutinho.
- Schuilenburg, M., Van Steden, R. & Oude Breuil, B. (2014). *Positive Criminology: Reflections on Care, Belonging and Security*. The Hague: Eleven International Publishing.
- Sennett, R. (2012). *Together. The Rituals, Pleasures and Politics of Cooperation*. New Haven: Yale University Press.
- Sennett, R. *The Open City* (unknown).  
<https://www.richardsennett.com/site/senn/UploadedResources/The%20Open%20City.pdf>
- Sunstein, C. (2005). *Laws of Fear: Beyond the Precautionary Principle*. Cambridge: University Press.
- Tabot, J. & Jakeman, M. (2009). *Security Risk Management. Body of Knowledge*. New Jersey: John Wiley & Sons.
- Tonkens, E., Trappenburg, E., Hurenkamp, M. & Schmidt, J. (2015) *Montessori-democratie. Spanningen tussen burgerparticipatie en de lokale politiek*. Amsterdam: Amsterdam University Press.
- Ungar, M. (2012). *The Social Ecology of Resilience. A Handbook of Theory and Practice*. New York: Springer.
- Verhaege, P. (2015). *Autoriteit*. Zutphen: Koninklijke Wöhrmann.
- Waal, F. de (2011). *Van nature goed. Over de oorsprong van goed en kwaad in mensen en andere dieren*. Amsterdam: Atlas Contact.
- Wacquant, L. (2001). Deadly Symbiosis: When Ghetto and Prison Meet and Mesh. *Punishment & Society*, 3-1, 95-133.

- Walklate, S. (2011). Reframing criminal victimization: Finding a place for vulnerability and resilience. *Theoretical Criminology*, 15(2), 179–194.
- Walklate, S., Mythen, G. & McGarry, R. (2012). States of Resilience and the Resilient State. *Current Issues in Criminal Justice*, 24(2), 185-204.
- Weick, K.E. & Sutcliffe, K.M. (2007). *Managing the Unexpected. Resilient Performance in an Age of Uncertainty*. San Francisco: John Wiley & Sons.
- Wildavsky, A. (1988) *Searching for safety*. New Brunswick & Oxford: Transaction Publishers.
- Wood, J. & Shearing, C. (2007). *Imagining Security*. New York: Routledge.
- Woods, D. D. (2006). How to design a safety organization: Test case for resilience Engineering. In: E. Hollnagel, D.D. Woods & N. Leveson (eds.), *Resilience engineering: concepts and precepts*. Aldershot: Ashgate, 315-324.
- Zedner, L. (2009). *Security*. New York: Routledge.
- Zolli, A. & Healy, A.M. (2012). *Resilience. Why things bounce back*. New York: Free Press.