



THE 18TH EDITION OF THE INTERNATIONAL CONFERENCE
EUROPEAN INTEGRATION
REALITIES AND PERSPECTIVES

Opinions on Resilience to Biological Crises

Vasile Bogdan¹, Viorel- Cătălin Mihalcea²

Abstract: Resilience to crises has always been a fundamental option of the world. The biological crisis is an easy type of crisis, cheap to institute globally or in specific targeted areas. It can have consequences that are hard to predict and impossible to counter. The protection of numerous social groups in relation to the presumption of biological attacks is a thorny issue, nationally and internationally. The insurmountable difficulty consists in the impossibility of protecting or isolating the entire population, simultaneously with the development of normal life and natural economic activity. Obviously, the defensive biological capabilities of the states should be of an enormous level, compared to the reduced but effective dimensioning of the offensive biological capabilities. Biological events in recent history, such as the COVID 19 pandemic, have highlighted just a few of the major aspects of biological challenge.

Keywords: resilience; biological crisis; biological agent; strain, capabilities; crisis management; consequence management; epidemic; smallpox; anthrax

1. General Resilience Statements

The term resilience has its origins in the Latin word “*resilio*”, meaning “*to recover, to return to its original form*” (Essex, 2017, p. 56). It also derives from the French term “*résilience*”. In the current content of the term, we have in mind the ability, the possibility of the citizen or collectives to adapt to misfortunes or the changes produced in the surrounding environment and to recover, for future recovery, an approach achieved through own effort.

Thus, the individual’s ability to adapt, to overcome difficult moments in life and to overcome unfavourable situations is appreciated, by strengthening the springs of will, physical and mental, by strengthening the subject’s ability to move forward. It derives from the choice of purpose in life, the existence of a vocation, the unsuspected activation of a strategy, with the establishment of the final moment of balance. In society, it is a protection mechanism, it offers the citizen the possibility of counteracting the effects induced by the social environment. The resilient mechanism contains four forms: reducing societal impact, diminishing hostile social manifestations, restoring individual esteem and generating new opportunities (Mihalcea, Sîrbu & Bogdan, 2019, p. 13).

Resilient capacity is a constructive balance between the adversity of the societal or state environment and the adaptive capacities of the social individual (Luthar & Cicchetti, 2000, pp. 857-885). So, it is the individual’s ability to overcome painful experiences and restore the complex human potential, avoiding the phenomenon of depression (Martin, Spire & Vincent, 2016, pp. 8-53).

¹ Danubius University of Galati, Romania, Address: 3 Galati Blvd., 800654 Galati, Romania, Corresponding author: bogdan.vasile@univ-danubius.ro.

² Carol I National Defense University, Romania, Address: Panduri Road 68-72, Bucharest 050662, Romania.

Resilience is characterised by distinct requirements such as *volitional drive*, *proactive attitude* and *continuous effort*. The *volitional drive* is the triggering factor of the efforts channelled towards overcoming the disturbing factors that have intervened, with the intention of restoring the previously held level. The *proactive attitude* is the mobilisation of the target entity's own action potential to restore the damaged ceiling, recover the level and progress of the individual. The *continuous approach* refers to the ongoing synergistic actions, concerns and efforts to achieve the objectives of the resilient approach (Mihalcea, Sîrbu & Bogdan, 2019, pp. 21-23).

2. Biological Crisis and Management

In the biological crisis, multiple aspects will be considered that must be known, understood and solved. Notification of the event, intervention, stopping the transfer of infectious agents and returning to the normal state are difficult to achieve. Intervention for the production of biological attacks is particularly difficult, as social panic is at high levels.

By generating multiple outbreaks of infection, under the conditions of globalization, the epidemic will multiply at the regional and global level in an extremely short time, only in weeks or months. As the effort to produce vaccines (according to the strain of the biological agent in question), testing on representative human samples and manufacturing vaccine quantities can take at least 7 to 10 months, followed by dissemination to medical formations and use by the mass of patients, it is found that the finalities of biological contamination will be extremely serious. In order to eliminate or reduce unwanted aspects, it is required that the states of the world develop effective measures of extended cooperation, for the surveillance of biological effects, to optimize preventive measures, mutual information and regarding medical assistance (Riedel, 2004, p. 401).

Biological crises are complex events, induced by different agents (viruses, bacteria and toxins), which can seriously affect human resources, animals, plants, and the environment. Contamination can occur by natural means (objective) or by human will (subjective manifestations). The potential for harm can be very high, developed or low. The parameter we referred to is dependent on the nature of the biological factors (biological agents), the aggressiveness of the agent, the form of dissemination and the receptivity of the target. Thus, man can be affected directly, but extremely, through biodiversity, especially through contact or through influences from the animal world. It must be recognized that there are multiple interferences between diseases specific to domestic animals, wild animals and humans, which make it difficult to control the evolution of diseases.

Visual cues or the attitude of human subjects can be useful for detecting biological contamination. Undoubtedly, the specialized control undertaken by specialized structures, carried out through biological laboratories, remains essential. In many situations, to confirm the biological agent responsible, biological samples must be sent quickly (at pre-set low temperatures and under sterile conditions) to prestigious laboratories outside the country to confirm the assumptions or initial diagnosis. The certification circuit of the source of contamination generates a delay in the application of the antidote, forces a high consumption of financial resources and offers the possibility of expansion, by generating other biological outbreaks (Bogdan, 2016, pp. 46-47).

During the crisis management and the management of the consequences, the effort to solve biological crises requires specialized measures and actions. Crisis management is focused on restoring security in the biological focus, social and natural environment, removing the biological aggression. It lasts for days or weeks. Consequence management, a large-scale resilient process, requires the monitoring of the

outbreak area, the elimination of long-term biological effects produced in the social and natural environment, and the resumption of lasting cycles¹. The duration of the stage is months or even years.

Crisis management comprises of five phases: notification, preparation, multiple intervention, outbreak elimination and establishment of normalcy. Regarding the predilect lines of operations, we notify: the reduction of biological damage, the securing of environments, the protection of groups and the maintenance of morale. Lines of operations having to work simultaneously. For the efficiency of the effort, the following methods are recommended: priority intervention, isolated intervention and random tests.

Priority intervention contains specific biological and medical actions, intervened in the outbreak, to reduce and eliminate hostile biological effects.

The *isolated intervention* consists of punctual actions outside the focus, synchronized with the major biological action.

Random testing provides random or random checks in extended social or natural settings for additional biological contamination (Leitenberg, 2005, pp. 71-73).

The biological operation forces the activation of detachments with strict specialization, able to eradicate the biological outbreak, protect the population and the natural environment.

3. Capabilities and Effort in a Crisis

The command/control of the biological operation belongs to the Ministry of the Interior, primarily by involving the specialists responsible for the medical field.² The command system, simultaneously with the implementation of the management act, ensures the necessary communications between the strategic, regional and local levels, as well as between the medical and research units. Extensive communication, in real time, with the use of specialists in the mentioned fields and the realization of synchronized interventions, on outbreaks, becomes essential.

In the case of a biological crisis, capabilities directly related to the missions performed must be available:

- facilitating the rapid detection of the nature of the agent used in biological outbreaks;
- the possibility of isolating biological outbreaks in relation to the natural and social environment, in relation to the movement of air currents;
- provision of antidote (as far as possible) and subsequent treatment for contaminated personnel;
- the possibility of establishing quarantine, with the decontamination of personnel, equipment and soil (Miller, 2005, pp. 10-11);
- multiple action in the biological outbreak, with the transport of contaminated personnel under safe conditions, to hospital institutions;
- mitigation of biological hostile factors in existing outbreaks and appropriate measures (Bogdan, 2015, pp. 135-136).

In the future, related to the nature of the biological crisis, other capabilities can be generated.

¹ Emergency Government Ordinance no. 20/25 April 2007 regarding the organization and operation of the Ministry of Internal Affairs, art. 2-4.

² Emergency Government Ordinance no. 20/25 April 2007 regarding the organization and operation of the Ministry of Internal Affairs, art. 2.

The effort in the biological outbreak obliges the immediate notification of the establishment of the biological event. Thus, the structures of the affected facility will intervene quickly with medical attributions, simultaneously with the establishment of isolation measures and to reduce contamination. In the outbreak of biological damage, measures and actions will be carried out, according to the sanitary-veterinary prescriptions of the facilities or the zonal managers. The identified outbreaks will be secured in the idea of isolating the contaminated area in relation to the social environment and the natural environment. The detachments and teams of the Intervention Group will be placed between the security perimeter and the outbreak, taking into account the direction of the wind. The representatives of higher-level commands, as well as local commands responsible for crisis management, will be present in the area. After the establishment of the biological operational device, the actual action will be triggered in the outbreak. Quarantine may be instituted in some outbreaks, according to specialist options. Persons contaminated with biological agents will be directed to the isolation facilities of medical institutions. The biological samples of the contamination will be preserved, the outbreak being isolated. The measures decided by the competent bodies will be carried out¹.

4. Case Studies

In the field of biological crises, the major events produced in the last decades in the reference field can be used as case studies. So we consider the case of the smallpox epidemic in Aralsk, the anthrax epidemic in Sverdlovsk, the use of the biological agent Salmonella, the use of anthrax in Tokyo, and the spread of anthrax in the USA (Dembek, Pavlin & Kortepeter, 2007, pp. 10-12).

4.1. Smallpox outbreak in Aralsk (USSR), 1971

Regarding the action of the Soviet structures intended for biological intervention:

- can be considered good, with reference to the situation of the totalitarian Soviet regime;
- acted correctly and quickly to secure (block) access to/from the biologically contaminated city, as well as to reduce travel to a minimum, in order to isolate the outbreak of the crisis and eliminate the contamination of neighboring areas;
- there were energetic demonstrations by the administrative authorities, together with the health officials, to control the quarantine area and the decontamination point;
- maintaining the confidentiality of the medicated authorities regarding the contamination, alongside the empowered structures of the Soviet regime;
- energetic action and concordant with the epidemiological needs, carried out by the sanitary structures, for the record, control and vaccination of the entire population of Aralsk (Dembek, Pavlin & Kortepeter, 2007, pp. 10-12).

¹ Emergency Government Ordinance no. 20/25 April 2007 regarding the organization and operation of the Ministry of Internal Affairs, art.3.

4.2. Antrax outbreak in Sverdlovsk (USSR), 1979

The involvement of Soviet structures intended for the management of the biological crisis:

- it can be appreciated as being of a good level, with the limitations typical of the totalitarian Soviet regime;
- should be considered as the correct action for the control and incineration of meat products, avoiding the spread of contamination;
- vigorous action to establish quarantine zone control and decontamination point;
- the confidentiality of contamination, a preoccupation specific to the Soviet regime;
- little concern for finding the source of the contamination, it is possible that the responsibility for the contamination rests with the military microbiological facility in the city of Sverdlovsk (Bogdan, 2015, pp. 218-219).

4.3. Salmonella case in USA, 1984

Involvement of US internal security structures:

- low level of opportunity, the intervention being generated quite late;
- modest concerns regarding the knowledge of the local situation in the area of the sect;
- unsystematised involvement of law enforcement agencies, in relation to repeated actions to expand influence and control;
- correct action carried out by the public health authorities to carry out first emergency epidemiological measures in the outbreak;
- isolating the source of the contamination and controlling the actions taken by the sect members;
- protecting the conduct of local elections held later in the county.

4.4. Use of antrax in Tokyo (Japan), 1995

Involvement of Japanese officials in biological crisis control:

- can be appreciated as being of a particularly low level;
- the previous formation of an unfounded opinion, regarding the impossibility of the existence of domestic Japanese terrorism, until the knowledge of the reality regarding the Aum sect;
- low concerns for knowing the real situation inside the sect;
- biological control of low rates in the area of maximum interest in the center of the Japanese capital;
- low cooperation between security agencies in Tokyo.

4.5. Dissemination of Anthrax in USA, 2001

Involvement of US authorities for the control of the biological crisis:

- can be considered as having a relatively low level, the initial information being made two weeks after the occurrence of the biological attack with anthrax;
- the attack consisted of three letter deliveries: *the first set* (September 18, consisted of five letters), *the second set* (October 9, two envelopes) and *the third delivery* (a letter sent to the Congress), without being notified (Bogdan, 2015, pp. 218-219);
- in the US multiple locations may have been contaminated with anthrax, maintaining confidentiality;
- because worldwide are about 1,000 banks of bacteria with inadequate security, corroborated with the low cost of use and the unpretentious level of dissemination, made possible the actions in the American space;
- during the consequences management period, biological safety determined the establishment and compliance of the essential safety rules (Riedel, 2004, pp. 401-402);
- the need for close control of the biological field, the requirement to destroy collections of anthrax strains (biologically unsafe) in institutions, the expansion of background analysis of technological capabilities regarding anthrax (Ackerman & Moran, 2006, pp. 13-15).

5. Resilience in Biological Crises

Biological crises will produce alignments and synchronisations of common effort in the context of the resilient state-society binomial. The difficulty of the crisis precludes possible adversity between state and society. The terms of the resilient state-society binomial will have intentions, visions for the future, interests, attitudes and a common effort. The resilient state has diagnostic, reporting, monitoring, intervention, logistical and medical support capacities at an appropriate level. The (deliberately) resilient society and the individual itself do not have such a possibility, being defenceless in the biological spectrum¹.

Biological crisis contains a wide range of distinct manifestations, measures, efforts and actions, carried out at the source of biological contamination, use of various transmission channels, access possibilities in the social environment and at the level of potential hosts (target community). The possibilities for low-level protection will be recorded, both collectively and individually.

Humans are targets for multiple threats from biological agents, and can receive unknown, unstoppable biological aggression, which can cause numerous human casualties. Humans are powerless in the face of biological aggression of any kind. Although streams of thought radiate energy and shape the state of mind, yet protection is provided only by the resilient state (Essex, 2017, p. 56).

The biological crisis is a balancing act between immunity and resilience. Immunity utilises the human body's ability to counteract biological aggressors (viruses, bacteria, microbes, sponges, fungi, parasites). Immunity can be enhanced by the mechanism of limited exposure to biological aggressors. As is well known, the human body's defensive process is specific to the action mechanism of vaccines. Vaccines make it possible for the human body to be exposed in a limited and controlled way to a biological agent with reduced virulence, in order to produce the human body's defence reaction (antibodies) to annihilate

¹ Presidential administration. The National Strategy for the Defense of the Country for the period 2020-2024. Bucharest, 2020, p. 23.

biological intruders in the future. Resilience will include immunity (natural and acquired), with resilient individuals overcoming adverse biological events, preserving their level of physical and mental health.

The difference between immunity and resilience needs to be stated. Immunity is the state of health of the subjects and resilience refers to the ability of individuals to overcome problematic situations, to recover from the biological attack produced, without disturbing the equilibrium, in order to be able to act unhindered in the future.

6. Conclusions

Political, societal and individual level shifts are needed to change the paradigm on the effort to build a resilient state and society, predominantly to hybrid challenges. Thus, the actions of the state are dictated by the legal framework, institutions and individuals, all analysed through the lens of volition and values. Clearly, resilient processes will be supported along the individual, family, collective and societal level.¹

The recent COVID 19 pandemic demonstrated that resilient success is dependent on overcoming feelings of fear, finding greater meaning in the situation created, building a positive self-image and future. All stresses must be eliminated. *External* problems (financial problems, tensions at work, dissatisfaction in the family, negative symptoms in the body), *intimate* problems (supportive people, but actually building an obstacle to solving the problem) will be controlled, the most difficult being *inner* problems (own beliefs from the past, things perceived as impossible, etc.) (Muntean & Munteanu, 2011, pp. 130-132).

At the societal level, the five dimensions of personality relevant to the resilience effort need to be kept in focus. Openness in the unfolding of experiences (willingness to learn, interest in new things), sociability of the subject (extroversion, optimism), enthusiasm (the requirement to be active and well-disposed), conscientiousness (careful planning of actions, maintaining a well-founded, disciplined purpose) must be supported.

For the biological crisis, resilience must be accepted on three levels - *individual*, *family* and *community*. At the *individual* level, the resilient individual will have the genetic endowment to generate the skills to respond rigorously to change, the existence of adequate capacities for social cohesion, with an uplifting sense of belonging to the community. The resilient *family* will have the capacity to energetically overcome life circumstances, providing robust functions for its members in relation to society (family formation, material support, care, education, socialisation, protection and support of more vulnerable members), basic cell cohesion, adaptability and emotional involvement. Key processes in enhancing family resilience will focus on the ability to find beneficial meaning in adversity, positive outlook, flexibility, spirituality and transcendence, robust connections, sufficient social and economic resources, clarity of internal communication, sharing of emotions and collaborative problem solving. The *community* aspect of resilience will be directed towards the dynamic characteristic, induced by the ability of the citizens of the organisation to act coherently in a supportive framework, identifying resources and stressors appropriately to counteract them. Social capital external to the family (participation in forms of organised community life - clubs, associations, churches), cultural (respect for the unique culture of the community, perpetuation of traditions that bring people together), human (the qualities of citizens themselves), financial-physical (buildings, schools, roads, utilities, various infrastructures) and political capital must also be taken into account. Community resilience actions are

¹ Presidential administration. The National Strategy for the Defense of the Country for the period 2020-2024, Bucharest, 2020, pp. 21-23.

specific to the involvement and actions taken in times of crisis and aftermath, produced to repair compromised levels and minimise the consequences of the biological event.¹

References

- *** (2007). Government Emergency Ordinance no. 20/25 April 2007 regarding the organization and operation of the Ministry of Internal Affairs.
- *** (2020). *Presidential administration. The National Strategy for the Defense of the Country for the period 2020-2024*. Bucharest.
- Ackerman, Gary, A. & Moran, Kevin, S. (2006). *Bioterrorism and Threat Assessment no.22/2006*. The Weapons of Mass Destruction Commission, Stockholm.
- Bogdan Vasile (2015). *Tratate, politici și strategii în domeniul afacerilor interne/ Home Affairs Treaties, Policies and Strategies*, vol. 2. Craiova: Ed. SITECH.
- Bogdan, Vasile (2016). *Bioterrorismul/ Bioterrorism, ed. a 2-a*. Bucharest: Ed CTEA.
- Dembek, F.; Zygmunt, Pavlin, A. Julie & Kortepeter, G. Mark. (2007). *Epidemiology of Biowarfare and Bioterrorism*. US Army Medical Research Institute of Infection Diseases, Fort Detrick, Maryland.
- Essex Arielle (2017). *Miracole la îndemână. Alegeri care vindecă și construiesc reziliența/ Miracles within reach. Choices that heal and build resilience*. Bucharest: Curtea Veche Publishing.
- Luthar, Sunnya & Cicchetti, Dante (2000). The construct of resilience: Implications for interventions and social policies. *Dev Psychopathol*, Vol. 12 (4).
- Martin, Nicolas; Spire, Antoine & Vincent, François (2016). *Rezilienta. Convorbire cu Boris Cyrulnik/ Resilience. Conversation with Boris Cyrulnik*. Bucharest: ed. Spandugino.
- Miller, I. Robert (2005). *The Impact of Quarantine on Military Operations*. USAF Counterproliferation Center, Counterproliferation Paper no. 31, Alabama.
- Milton, Leitenberg (2005). *Assessing the Biological Weapons and Bioterrorism Threat*. Strategic Studies Institute, US Army War College, Carlisle, PA.
- Muntean, Ana & Munteanu Anca (2011). *Violență, traumă, reziliență/ Violence, trauma, resilience*. Iasi: Polirom.
- Riedel Stefan (2004). *Biological Warfare and Bioterrorism: A Historical Review*. Baylor University Medical Center Proceedings, vol. 17, Number 4.

¹ Presidential administration. The National Strategy for the Defense of the Country for the period 2020-2024. Bucharest, 2020, pp. 296-315.