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Biosecurity State: Responding to Malicious Biosecurity Risks

Quite early on in the current Ukraine conflict, the Russian Authorities claimed, with very little supporting evidence, that the United States (U.S.) had been developing biological weapons in Ukrainian laboratories. Observers highlighted the so-called 'fake news' angle to these claims – a key facet of modern hybrid conflict. However, coming hard on the heels of the global Covid pandemic, it generated a more than passing interest in the possibility of future conflict being linked to biowarfare.[2] Such suggestions are easy to make but the question remains – how likely is the use of biological weapons in a future hybrid conflict scenario? Do the circumstances exist, which suggest that states might deliberately seek to create or acquire biological weaponry and worse, actually consider their use?

Biological weapons and conflicts

Fortunately, the world has been spared – so far – the scourge of a major global conflagration using biological weapons. A major factor in this situation is the fact that so few states have actively sought to develop a viable and significant biological weapons programme and those who have traditionally considered them as a feature of a rounded military capabilities posture, such as the former Soviet Union and the United States, have gradually eliminated their stockpiles.[3] One might argue that the description above is partial, however. Various states have claimed that they adhere to the Biological Warfare Convention (BWC), which prohibits the development, production, acquisition, transfer, stockpiling and use of biological agents or toxins as outlined by the Convention. However, there is a lingering suspicion that some states might have attempted to circumvent the prohibition and have sought to develop a workable weapons programme or

[1] Centre for the Study of New Security Challenges.
[2] Inskeep–Yousef 2022.
[3] See UNODA s. a.

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at least conducted the research that might allow them to do so quickly. Given that the BWC has no inspection or verification mechanism, then such suspicions are difficult to either confirm or deny.[4] There is also a significant concern that non-state actors might seek to acquire or develop their own stock of biological weapons. The use of simple pathogens or toxins has been associated with the occasional terrorist attack, although again, the incidences have been thankfully low.[5] The attraction of having or using a biological weapon remains relevant and multi-faceted. Depending on the type of biological weapon, it is possible to inflict a range of suffering or hardships on an adversary. Traditional concerns tend to focus on death and illness and the generation of significant societal dislocation associated with a public health emergency. For some advocates of the use of such weapons, this dislocation and disruption could be an end in itself and not simply an element of a larger operational assault. For others, the ability to create panic and sow public distrust might be enough to degrade a state's ability to respond in a crisis or effectively build up a willingness to actively resist an adversary.[6] Certainly, it is also more than likely that the effective, targeted and graduated use of biological weapons could lead to severe economic shock and significantly alter the calculus of engaging in conflict. Other observers are becoming more alarmed at the potential environmental damage that such a conflict might engender if there is a widespread use of toxins that in extremis, could lead to food shortages or spiralling prices. If such events can happen in relation to energy shocks, then why not in relation to disruptions in the food chain? Such 'shocks' to global stability clearly suggest that 'scale' matters – if a biological weapons strike were of sufficient magnitude, it could, given time, have a massive disruptive effect. One need only examine the current global Covid pandemic to witness the effect of the world's relative inability to halt the spread of a highly contagious biological risk and the recent medical barriers have taken months to develop by which time millions of people have died in the interim. Therefore evidence, if evidence was needed, that biological threats, if 'weaponised' can wreak havoc on an unprotected and unsuspecting global population. Yet under a traditional conflict scenario, the originator of such a weapon would presumably have a purpose for using such weapons and as such would wish to have a degree of control over both use and the resulting consequences. Would this remain the

[4] UNODA s. a.
[5] Kaplan–Marshall 1997.
[6] Chan–Ridley 2022.

case in relation to hybrid conflict? Can we assume that the use or possession of biological weapons will be conceived in a hybrid conflict as that of a traditional conflict? Do the circumstances under which one might posit the adoption of a hybrid strategy continue to lend themselves to the identification of an advantage through biological weapons? The answer to this question depends largely on the conception you might have of what constitutes a hybrid strategy. Indeed, it might depend more on whether or not you can acquire a biological weapon than whether or not you might like to consider its use.[7] By and large, acquiring a nuclear weapon is akin to the acquisition of a nuclear capability – it clearly can be a weapon of mass destruction, it can be developed in such a way to calculate the scale and form of destructiveness and it might lend itself to various forms of 'delivery'. Indeed, one might argue that it is the issue of 'delivery', which might be a distinguishing feature of both the weapon and the form of conflict.[8] Therefore, in a traditional form of conflict calculus, possessing a biological weapon offers a form of capability, which can be exploited in various ways. Of course this recognition of capability or strength only works if you are willing to communicate this fact to an adversary. The leverage such a weapon might afford you is commensurate with the level of concern its announcement generates on the intended recipient of the news.[9] Yet clearly, the hesitancy and unpredictability that might arise from the mere suspicion that a state possesses such a weapon cannot be ignored and would undoubtedly impact any risk assessment within an adversarial relationship. Even the hint that a state has been researching or trying to develop a biological weapon and a delivery platform to go with it is difficult to plan against other than the adoption of a 'worst case scenario' posture.[10] Therefore, should it be in the interest of a state to acquire a reinforced sense of protection, especially within a hybrid setting, then in that case, acquiring a biological weapon might make sense. There is another scenario, however, within a set of hybrid considerations, that needs to be explored and that could be the use of a proxy or non-state actor to either acquire or deploy such a weapon. The use of proxy forces or terrorists within a hybrid conflict setting is frequently cited in professional literature exploring the subject. The attraction of conducting operations, which are either deniable or unattributed, is often cited as a force

[7] Mangold–Goldberg 1999.
[8] Mangold–Goldberg 1999.
[9] Mangold–Goldberg 1999.
[10] Alibek 2000.

multiplier in a hybrid conflict and certainly one can see the value, especially if it secures strategic or operational surprise. Using biological weapons under such circumstances could be worth the effort, especially if one could control the strike and delivery and crucially, the outcome. However, one can also identify some drawbacks. Using biological weapons would require, depending on the nature and scale of an attack, very precise planning. A limited biological event is not beyond the capabilities one would assume of a proxy force with all the likely support of the sponsor state that would go with it and even a dedicated and professional terrorist group. One could even imagine, depending on the nature of the pathogen or toxin, a so-called 'lone wolf' event. Yet such planning by definition might open up the originator of the attack to scrutiny – perhaps due to an adversary's indicator and warning system – or simply due to missteps in the preparation stage, such as the need to test the weapon or the delivery system. Equally, should the planned attack fail to materialise for whatever reason or become compromised, the repercussions might trigger an immediate reaction or alter a well-rehearsed plan of hybrid pressure within an overall hybrid concept of operations. Indeed, given that biological weapons are considered weapons of mass destruction, it is feasible that a botched attack or indications of an impending attack could trigger an asymmetrical response and one, which might include the use of other forms of weapons of mass destruction. If a biological strike against a nuclear power were to unfold, one considered by them to be an 'existential threat' – then it is quite conceivable that the retaliation might unleash an unanticipated strategic response.[11] It is clearly possible, therefore, to speculate that a hybrid strategy could easily include a biological element but before a more valued assessment might be made, it is worth considering a much more fundamental question and that is the question of how likely is it today that a non-superpower or possible proxy or terrorist group might acquire a biological weapon?

Biotechnology and biosecurity

An interesting feature of the Covid pandemic has been the need to discover the origins of the outbreak and as much detail as possible about the pathogen. This has led to numerous investigations into the origins of Covid and interestingly, it

[11] Chan–Ridley 2022.

throws light on how such outbreaks occur, how they develop and where the scientific community fits in.[12] For many months after the outbreak, the international public health community was minded to frame the outbreak as a natural zoonotic occurrence, not much different from SARS or MERS. That early view was never fully accepted by all in the medical or scientific community and as more evidence and data came to light, the consensus opinion was forced to change. A significant body of opinion began to dissent from the 'public' narrative and even though debate continues to persist, the general public has been provided with an insight into some of the contours of current cutting-edge biotechnology research and development. This activity, much of it conducted under less than transparent conditions and in a network of global laboratories could understandably be abused by those harbouring malicious intent of having a clearly dual purpose. A major problem regarding all forms of weapons of mass destruction proliferation is this very problem of the use assigned to so-called 'dual use technologies'. The issue therefore within the ambit of hybrid conflict and biological weapons is possibly that any attempt to develop a biological weapons programme would lean heavily towards the illegal acquisition of biological material, specialist research data and perhaps more intriguingly, acquisition of experts.[13] Most public discourse on biosecurity risks tend to focus less on the use of bioweapons in a state on state conflict and more towards a possible dystopian future resulting from some form of natural or intentional man-made pandemic. Much of this angst is more likely than not to be a result of the fear generated globally by the Covid pandemic and speculation regarding its origin, although one can make a plausible case for saying that mass media and entertainment outlets have exploited such fears, through both TV and film. It would be unwise, however, to dismiss such fears as being forms of unthinking paranoia. Given that surprise is a traditional ingredient of conflict, hybrid or otherwise, then the factors behind lethal pandemics cannot and should not be dismissed as either a form of deliberate attack or simply an accident. If there is one thing that Covid has demonstrated is the need to determine how and where the deadly pathogen emerged – not only for purposes of attribution but also to prevent baseless accusations. If it had not been for the drive to find the cause of the Covid outbreak, most of us would be unaware of the scale of cutting-edge international biotechnology development that goes on in many of our countries, the very acute risks associated with gain of function

[12] Chan–Ridley 2022.
[13] Kaplan–Marshall 1997.

experimentation and the vast financial rewards linked to significant medical or pharmaceutical breakthroughs.[14] Could this be attractive to a hybrid conflict adversary? If this adversary is sufficiently weak in a power relationship and wishes to eliminate or rebalance this supposed weakness, then clearly having access to some pretty lethal and nasty pathogens or toxins for example is not outside the bounds of possibility. Whether the actor that deliberately seeks to acquire such material or the results of the experimentation is a state or non-state, the risk of a deliberate 'release' could be globally consequential depending on the lethality of the agent released. It is unfortunate but occasionally, aspersions are cast against scientists or technicians or medical practitioners as being either excessively secretive or even deceitful in the conduct of their research, especially in those fields which form part of life sciences and biotechnology or bioengineering. Yet equally, a blanket clean bill of health cannot be assumed. Covid investigations have unearthed a range of worrying practices, including poor health and safety and security protocols in laboratories, unnecessary risky experimentation where the risk of failure could have significant consequences and human frailty. All of the above could, under certain circumstances, be exploited in a deliberate attempt to acquire or manufacture a bioweapon. Furthermore, it would be unwise also to dismiss the sums of money, which support biotechnology research and development – a beacon for corrupt individuals within the sector to exploit their access or be susceptible to corruption. However, is the public perception accurate or meaningful or insightful? Is there any relevance here to hybrid conflict? Unfortunately, the answer must be yes – albeit a qualified yes. The potential negative outcomes and possibilities of the above can lead to or support an attempt to acquire or release a lethal virus or toxin. The medical and biotechnology community is only too aware of such risks, although by and large the research community is more likely to view these risks through the prism of accident. Nevertheless, the outcome might be somewhat similar. That these risks have become accentuated since the global pandemic is witnessed through the significant enhancement of state preparedness for a future global biological event. Encouraging as this is, however, the desire to enhance safety and security at sites or facilities, which might attract a higher level of risk can only really be achieved in stable, well-functioning states. The level of confidence in the security of medical or pharmaceutical research in weak or so-called failed

[14] See The Economist 2021.

states inspires less confidence.[15] Additionally, the nature of global academic research and technological research is such that transparency and sharing of results of research is the default setting. For example, controlling sensitive research data is difficult within a transnational setting and if there is a clear commercial interest involved, governments are far less well placed to keep an eye on significant technical developments, including those linked to bio and life sciences.[16] As a result of these marketplace developments, governments are being forced to recognise that some of this activity could very well be used to support a hybrid conflict activity and the question is, how do you identify the potential indicators and warnings, especially when the understanding of hybrid conflict is so shallow and fragmented? Undoubtedly, traditional security specialists are being pushed towards having a more inclusive view of the potential threats, risks and challenges associated with these emerging and evolving issues. Indeed, one could argue that what needs to develop is a new risk calculus. That novel forms of bioweaponry are likely to emerge sooner rather than later, then it might be prudent to gauge what form such weapons might take, how they might be used against a range of hybrid targets and where they might fit into a hybrid strategic, operational or tactical setting. Furthermore, by making such assumptions, or simply seeking to develop a 'tout azimuth' approach to security, one must ask if the current and traditional forms of early warning and risk assessment can be of much use in these bio technology settings? Public Health and National Security are not natural bedfellows when it comes to strategic priorities and methodologies but under a hybrid context, we might need to consider how well or otherwise such a biohazard partnership might emerge in the future.[17]

Implications of the evolving biothreat

It is far from easy to speculate if the use of bioweapons in a hybrid conflict is more or less likely. Those who point to the Covid pandemic tend to emphasise the potential widespread reach of the public health crisis and therefore anyone with a malicious intent might be tempted to create or use a bioweapon if they had

[15] De Bretton-Gordon 2020.

[16] House of Commons 2021.

[17] This will possibly lead to a new type of investigator that has both a law enforcement and public health remit, which also implies specialist recruitment and training.

access to it. However, equally, one might highlight the fact that the actual ability to control such a pathogen's spread – ensuring no 'blowback' so to speak – is tenuous at best. Current levels of globalisation challenge such considerations. If the idea of using bioweapons in a hybrid context was to achieve surprise, then arguably this might be possible but to view it as a flexible and measured weapon of strategic significance could be a step too far. Equally, however, developing a new bioweapon programme based on current cutting-edge bioengineering is most certainly within reach of both a state and a non-state actor. Even under hybrid conflict conditions, the limited application of a targeted biowarfare capability could accrue significant advantages, ranging from weakening a particular target or target group to instilling general fear and panic should the weapon be linked to other information warfare elements of hybrid strategy.[18] Yet, actually one of the major unintentional risks of developing an active biosurveillance system is that it impinges on a fundamental aspect of a democratic society – privacy. The potential friction and stress that a constant biosurveillance environment might generate could in itself be a desired outcome for an adversary that 'flags up' in some way their access to bioweapons and a willingness to use it. Such claims can be investigated to an extent but just how effective would such auditing be? Short of significant levels of proof that such a capability exists and that it is either pre-deployed or could be readily deployed against you, how does a state react? How do you assess if such a risk is real but is located in another territory? If all you can realistically do is to deploy sophisticated surveillance systems, including, in extremis, periodic 'lockdowns' in response to isolated or coordinated disease outbreaks, then the fundamental concept of an 'open society' could be put in jeopardy. Indeed, in a society where biotechnology and life sciences is a significant part of the fabric of that society, there is likely to be precious little consensus even on were we place our security: do we put academic and technical life science development under surveillance? Do we vet bioengineers? Should laboratories be policed? Should foreign students across a range of technical studies be banned? Fears of hybrid conflict involving bio-weaponry are not necessarily unfounded but they certainly do impact on a wider slice of life. Perhaps the obvious point of departure for a consideration of how best to deter or defend against bioweapons in a hybrid context is to engage in

[18] Consider the fear and panic created in the USA as a result of anthrax terror attacks, which although resulted in a small number of deaths, the response generated was significant on the part of the U.S. authorities.

some philosophical investigation. Considering bioengineering or life sciences as a so-called 'dual use' activity might be as good a place as any to start. Unfortunate as it might be, it is impossible not to recognise the lethal potentiality of activities that exploit life sciences and associated technologies, such as artificial intelligence or nanotechnology, in the process of creating bioweapons. One has only to look at the scale of Soviet 'Cold War' era bioweapons programmes to understand how thousands of scientists could dedicate their professional careers to cutting-edge research and development in pursuit of weapons.[19] It is essential therefore that such an approach be embedded into a wider scheme of information and educational outreach to the target scientific and technical audience. The security community should be encouraged to join with the public health community in working alongside the biotechnology community in order to provide adequate warning of the potential hazard that might emerge or develop as a result of research, the outcome of which might not even be known let alone understood.[20] It will also be necessary to enhance the security of those materials and processes, which are integral to work on this challenging field. This should not be considered as a new departure related to hybrid conflict – it clearly is not. What is new, however, is the scale of development in this field and the clear overlapping of various disciplines, ranging from microbiology and toxicology to algorithm design and development and cloud computing. Efforts must also be made to better guide and regulate those who work in this field, not only in terms of regulatory frameworks – perhaps based on international norms but also in respect of developing legislation – a not unexpected outcome of the levels of concern relating to biosecurity that has emerged in the wake of the Covid pandemic.[21] Clearly such developments will inevitably lead to more intrusive vetting of key scientists, researchers and students working in this sector and with it perhaps a more stringent control regime for gaining access to those materials needed to develop the vaccines and other pharmaceuticals that society so plainly relies upon. The unstated or understated concern here is not simply access to physical 'precursors' – for the want of a better description but a requirement to dampen or completely eliminate the risk of intangible technology transfer.

[19] Alibek 2000.

[20] Such a solution will be far from simple to structure but it seems a logical progression in terms of government responses to biosecurity threats.

[21] The Global BioLabs Report of King's College, London is an excellent tool for examining the potential risks facing the biosecurity communities in labs. See King's College London 2023.

Obviously to do this effectively impacts on the association of cybersecurity and 'insider threats', two methods commonly used to illegally gain access to research, material and personnel.[22] In the years ahead, this concept of greater transparency and regulation – which might be contested by interests within the sector and which, although partisan, are not unaware of the hazards linked to the science and research of the life sciences and biotechnology community – there might come a time when this sector is placed on an equal footing with the nuclear energy community and even more severe, as an aspect of national security.[23]

Conclusion

All of the above considerations and explanations are not unique to concepts of hybrid conflict. They might apply to a future hybrid clash but equally might be just as likely to support a traditional clash or even support the tactics of a so-called 'lone wolf' terrorist or technologically capable non-state actor group, including organised crime. The potential attraction of bioweapons might lie in the shock and surprise associated with its release and the resultant panic. This inculcation and generation of fear clearly has an asymmetrical value if nothing else. Furthermore, events in the Middle East have demonstrated that deploying chemical weapons might suggest that doing something similar with bioweapons is not in any way and act 'beyond the pale' or beyond calculation of gain and loss. What seems different today is the perception that novel weaponry is a 'norm' and that if an actor in a clash with a superior power can acquire or develop even a rudimentary form of bioweapon, the chances are that use might be considered. Realigning the way we try and control the bio sector might eventually lead to tighter and less advantageous area in which to short circuit the development of a weapon of mass destruction programme and by association, make the sector more resilient to abuse. The key question, however, is who will lead the way in calling for such a 'realignment' at a time when 'novelty' in our post-modern context is considered a sign of 'cleverness' and sophistication.

[22] King's College London 2023.
[23] King's College London 2023.

Questions

1. Explain how a bioweapon – if released in an urban environment – could contribute to strategic surprise in a hybrid conflict?
2. What could be the main disadvantages of using bioweapons in a major conflict?
3. In terms of gaining access to controlled information within a biotechnology environment, would cyber penetration or a so-called 'insider threat' be more effective?
4. What forms of deterrence would be most effective against a bioweapons threat?
5. Should the EU acquire a bioweapons capability? Discuss.

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