What war games tell us about a possible Russian invasion of Ukraine

Combat simulations have eerily predicted the course of military history – and recent results can make for chilling reading

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Sixty hours. That was all it took for Russian forces to reach the foreign capitals: Tallinn, Riga and Vilnius, in Estonia, Latvia and Lithuania respectively.

In 2014/15, the Rand Corporation, a US think tank largely funded by the government, brought together groups of leading military personnel, including figures from the US army, air force, navy and Nato naval command. They met in Washington DC, London, Ramstein Air Base in Germany and at Nato headquarters in Brussels to conduct a series of war games.

The players were placed in one of two teams, of five to 15 members – the Red team, Russian forces charged with occupying the Baltics, and the Blue team, comprising Baltic countries, US forces and Nato forces trying to stop them. In war games like these, players move their military pieces around a board, rolling dice to determine what happens in moments of uncertainty. Think of Risk, only far more sophisticated, with open-ended rules – the limits of what a player can do are set by umpires, not a rulebook – and played by some of the greatest military minds in games that can last up to a week.

The results of the Baltics games were chilling. In more than 30 games, whether played by military or non-military personnel, Russian troops arrived at Tallinn, Riga, and Vilnius in between 36 and 60 hours. "There was nothing ambiguous about the results: Nato *always* lost," recalls David Shlapak, a senior defence researcher at the Rand Corporation.

At this point, Nato would essentially be left with three options, each as unpalatable as the last. The alliance could engage in a counter-offensive, which would almost certainly bring horrific loss of life. It could escalate the situation further, threatening nuclear reprisals if Russia did not withdraw. Or Nato could concede defeat over the Baltics, at least temporarily.

On one level, these were merely games. But, after Russia's annexation of Crimea in 2014, they highlighted how ill-equipped Western forces are to deal with further Russian aggression in eastern Europe. Even when – unlike in Ukraine – the affected countries are in Nato.

The games, said Rand, showed that: "As currently postured, Nato cannot successfully defend the territory of its most exposed members." Essentially, Nato forces in the Baltics – both on the ground and in the air – needed to be substantially beefed-up to support the national military in the three countries and make the states more capable of resisting a Russian offensive.

In the years since, a Russian invasion of Ukraine has been simulated. The results of these are classified; what happened in these will help to inform a potential western response to Russian invasion. War games, too, are likely to have influenced Russia's actions in the

Ukraine, and Vladimir Putin's decision to send the army over into Donetsk and Luhansk to "maintain peace".

War games have ancient roots. There are accounts of abstract games being played among rulers in ancient Egypt and China as far back as 2000 BC.

Modern war games can be traced back to 1811. Baron Leopold von Reisswitz, the Prussian war councillor, invented a game with a 3D model of real terrain, representing units in blocks; each side would give orders to an umpire, who updated the terrain table. As Matthew B Caffrey Jr recounts in his book, On Wargaming, casualties were determined by umpires, using a combination of tables indicating likely losses, based upon factors like the weapons used, the distance of fire and the terrain, and randomness – the rolling of dice.

Then, in 1837, Helmuth von Moltke the Elder was appointed chief of staff in the Prussian army. Over 30 years in the role, Moltke led an increase in wargaming. Every year, Caffrey Jr writes, Moltke would take the entire student body of the war college to one of Prussia's invasion corridors. Together with senior officers, they would be placed into defending and invading teams to stress-test Prussia's military readiness. "The ability to quickly arrive at decisions and the cheerful assumption of responsibility which characterised our officers in

the Franco-Prussian War of 1870–71 was in no small measure due to war games," wrote General Kraft, prince of Hohenlohe-Ingelfingen.

In 1905, General Alfred von Schlieffen and lieutenants gamed a version of the Great War, pitting Germany against the armies of Russia, France, Britain, and Belgium; the armies' moves largely foreshadowed how their real armies would act nine years later. In the winter of 1910/11, the British brigadier Henry Hughes Wilson and staff conducted their own version of a Great War – an indication that, regardless of whether or not they wanted a war, Europe's great powers were planning for one.

For all the changes in war in the last two centuries, the essence of war gaming– bringing decision-makers together in a room with a board, pieces and dice – has changed remarkably little. Rather than artificial intelligence, these games rely on human intelligence. "We're not trying to figure out what people might do by simulating people," Shlapak explains. "We do it by having people actually make the decisions. Using AI would defeat that purpose."

Perhaps the greatest use of war games lies in alerting players to possibilities that seem remote, even absurd. In the interwar period, US Navy military war games planned for campaigns against Japan, Germany and – extraordinarily – even Great Britain and the British Empire. Japanese air attacks on Pearl Harbour occurred in a US navy war game, simulating a conflict against Japan, as early as 1932. Admiral Chester W Nimitz, the commander of the US Pacific fleet in World War Two, later said that, thanks to war games, "absolutely nothing" that happened during the war was a surprise – "except the Kamikaze tactics".

War games can even claim to have changed the course of history. In Liverpool during World War Two, the Western Approaches Tactical Unit, staffed largely by members of the Women's Royal Naval Service, conducted war games to understand why they were losing so many ships to German U-boats.

These games suggested measures to reduce the losses – like delaying the departure of a convoy of ships to the Soviet Union and forming a group of anti submarine warships to attack U-boats. The findings, as Caffrey Jr documents, were acted upon by naval command. Just as predicted by the war games, the result was that fewer ships were sunk by U-boats. Nearly 5,000 naval officers played the war games in Liverpool from 1942-45. When the tactical unit closed down, Admiral Horton, the commander of Western Approaches Command, said that it "contributed in no small measure to the final defeat of Germany".

The games simulating Russian involvement in the Baltics in 2014/15 contributed to a modest increase in Nato and US army forces in the three countries. They also initially led to an unwanted unintended consequence: a short-term decrease in foreign investment in Estonia, Latvia and Lithuania.

It is common for US generals and corporals to take a week off to undertake wargaming exercises at the Rand Corporation. Smaller war games are also played among senior members of the National Security Council.

"War games provide a really powerful and unique tool to really cultivate that tactical acumen and strategic thought," says Sebastian Bae, who served in the US marine corps for six years and is now a game designer for the non-profit CNA Corporation. "Just like when I was in the marines, going to the firing range helps foster marksmanship, educational wargaming provides a venue for professionals to exercise their tactical or strategic decision-making.

They are also a tool to get players to think like someone else, giving insights into how an opponent – or even an ally – might behave. For instance, war games suggest that players playing as national governments in Eastern Europe might favour surrendering to Russian aggression – thereby saving the lives of their own citizens – rather than fighting alongside their allies.

"You get these moments where there's just this breakthrough," Bartels says. "Watching international officers understand that the reason I can't get my partner or ally to agree to something just because it's unconstitutional or because that's not how the system works there. There's always the joking line about America coming in like a bull in a china shop and

breaking stuff. Watching American officers understand where they may be coming up against real limits from their partners and allies has been really meaningful."

Evidence exists that games can change players' behaviour in real life. Participants in war games during the Cold War gained a greater sense of the weight of their decision-making, according to research by John Emery, a professor at the University of Oklahoma. They developed habits of ethical restraint that may have influenced their actions during the Cold War, as they became more aware of how easily conflict could escalate into nuclear war.

Players can also over-interpret the lessons of games. Before the Iraq War, the US used war games extensively. Just as the games had suggested, it was relatively simple to capture Baghdad: it took just 23 days for the Iraqi capital to fall to coalition forces. The occupation – something that could not easily be gamed – however proved disastrous.

In 2020, showing the growing acceptance of war games within academia, Banks became KCL's first war gaming lecturer. Banks suggests that, as the world confronts new problems – like tussles for resources stemming from climate change – "there's more of demand in the wider world for gaming". There have been war games related to Taiwan declaring independence, a western invasion of North Korea and – long before Covid-19 – global pandemics.

Games cannot really predict the future, but they can help to illuminate it. They can offer warnings about what the future might bring – even if, as with Russian intervention in Europe, they can go unheeded. "There's no substitute for experience," says Bae. "But war games enable you to be better prepared. It's like trial lawyers doing mock trials." Yet for the questions posed by wargaming to be useful, those in power have to be prepared to hear the answers. "Everybody has a plan until they are punched in the face," the boxer Mike Tyson observed. Done well, war games can give players experience of being punched in the face.

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