Does the Ukraine war lead to the development of more dangerous weapons systems?

The Ukraine war is leading to an increase in arms spending by many nations. An enormous arms race is foreseeable, especially in key technologies such as artificial intelligence (AI) and cyberspace. No nation can risk losing out in this regard. As a result, it is expected that automatic or autonomous systems will soon be available for many types of weapons. These developments involve software, of which there may be many copies in different places. Therefore, arms control agreements are difficult to achieve and hardly verifiable. Autonomous weapons, whose irreversible development is now being triggered, will remain for us.

Warfare based on autonomous weapons will be difficult to control. Furthermore, incalculable interactions are possible between autonomous weapons (for example autonomous unmanned submarines) and cyber attacks on the one hand and nuclear forces and early warning systems for nuclear threats on the other. Cyberattacks could impact early warning systems in a variety of ways. New weapon systems such as hypersonic missiles with higher accuracy and increasingly shorter flight times also require the increasing use of AI techniques in early warning systems to make decisions automatically for certain subtasks, as there is no time left for human decisions. However, the data available to make a decision is uncertain and incomplete. Therefore, even AI systems cannot make reliable decisions in such situations. The complexity of nuclear threat situations (including false alarms) will increase to a degree that is almost impossible for humans to control. This significantly increases the risk of nuclear war by mistake, especially in crisis or war situations (see www.unintended-nuclear-war.eu).

Important foundations of arms control in recent decades were mutual control and information exchange, e.g. on the basis of "Open Skies". Not only have such agreements been terminated, but also scientific cooperation with Russia and China has recently been severely restricted. This makes research and development in important fields such as AI less transparent. Less scientific exchange also means less contact between the people involved, and as a result the willingness of scientists to also participate in military projects could increase.

The current course of confrontation between major nations, with the severance of many relationships, is accelerating a dangerous arms race for new AI-based weapons systems. To slow this down, an improvement of international relations would be necessary, which can be done on all levels, e.g. also scientifically and economically. Of course, this cannot completely prevent the AI and cyberspace developments mentioned above. But with good international relations, priorities for AI developments will shift and thus risks could be reduced. So an important step to rebuild trust could be to improve scientific exchanges. Sporting and cultural exchanges also improve trust between peoples. Such measures could also be important steps toward facilitating negotiations between warring parties at some point.

Due to the technical possibilities (nuclear weapons, bioweapons, autonomous weapon systems), mankind cannot afford a permanent confrontation course between the major military powers. The "security through trade" strategy has not failed. It was not sufficient to prevent the Ukraine war. Further measures would have been necessary for that. But such a strategy is necessary for lasting global security.