## French Symposium on Soldier Enhancement & Part 7

#### Editor's note:

A symposium on French army initiatives to enhance soldier capabilities was held in Paris 19 June 2017 at the headquarters of the French Armed Forces titled "The Enhanced Soldier: The Needs and Prospects of Increasing the Fighter's Abilities." The Army University Press at Fort Leavenworth, Kansas, agreed to publish translated versions of the presentations given in seven parts as *Military Review* Online Exclusive articles to promote broader understanding of allied views and initiatives on a subject of intense collective interest. The below is the seventh of the seven presentations. The other presentations are published in separate documents.

The Hexagone Balard, headquarters of the French Armed Forces and the Ministry of the Armed Forces, 19 December 2015 in Paris. (Photo courtesy of Wikipedia)



A French special operations soldier participates in a full-scale joint exercise in Djibouti, Africa, circa 2020. Efforts to artificially enhance soldier capabilities for the complex technological and cultural operational environment of the future require careful consideration to ensure that improved physical or technological abilities do not diminish an individual's inherent intelligence and fundamental humanity. (Image courtesy of the French Armed Forces)

# Conclusions and Perspectives

### Lt. Gen. Patrick Godart

This is a translation of a lecture given during the conference called "The Enhanced Soldier: The Needs and Prospects of Increasing the Fighter's Abilities," held in the headquarters of the French Armed Forces, in Paris, 19 June 2017.

 oncluding the discussion on soldier enhancement after the meaningful preceding discourses is
challenging. In any conclusion lays a dimension of closure and of completion. However, it is obvious that we are considering, opened by this topic, fields of thoughts of considerable extent and numerous paths still to be explored.

To add to these reflections, I will provide a counterpoint in the way of a devil's advocate. Two ideas **Lt. Gen. Patrick Godart** is the inspector general of military medical services in the French Armed Forces.

may arise through two initial questions. First, enhancement is a positive process, intended to provide superiority and advantage. However, does it not cause an alteration of an individual's natural capabilities if he benefits from this artificial enhancement?

Second, as a corollary, is not the enhanced soldier in a way a "weakened" man? As we know it today, enoperational incapacity because the soldier, the squad, or the commanders are less likely to be willing or able to function without the support of enhancement technology. This is what we all intuitively know when we forget our cell phones at home in the morning. Is it not distress and a profound sense of incapacitation that we feel in these moments? In this way, technology alienates us.

Is not the enhanced soldier in a way a 'weakened' man?

hancements are based on new technologies supported by artificial intelligence (AI). Is there a risk of weakening the autonomous capabilities of the soldier? Is AI likely to diminish the fighter's own natural intelligence? We will describe this risk as "artificial ignorance"; that is, the soldier's loss of certain mental abilities as a result of artificial intelligence enhancements.

#### **Enhanced or Weakened?**

To approach this concept of the "weakened" man, it is appropriate to look for some references in Joseph Schumpeter's philosophy, notably his famous axiom of creative destruction.<sup>1</sup> According to this philosophical concept, one could propose that the enhanced combatant (the innovation) specifically understands a part of the reduction of his natural capacities. This statement seems simplistic, even caricatured, and it requires explanation.

If the fighter's perceived abilities are improved by technology, what about his residual natural abilities? What about proper cognition when he becomes technologically enhanced? What about the soldier's resilience when his natural abilities interfere with some enhancement technology?

Another question is what will remain of the future soldier's operational capabilities if he loses, in whole or in part, his enhanced capabilities because of technical failure? Will he be able to continue fighting? This raises the question of technological resilience, or even enhancement's resilience. Tomorrow's fighter could be deprived of enhancement tools (or the tools' function) during combat but will still have to carry out his or her operational mission.

Marxist philosophy would say the process alienates the individual fighter. This alienation takes the form of To conclude on these points, it seems appropriate to choose an extreme example. Today's fighter is and remains a man of flesh and bone whose body is ultimately his main weapon system. This man becomes enhanced; in other words, he has internal or external technologies added to him that improve upon or replace his natural abilities. The enhancements bring the soldier levels of reliability and accuracy that are far superior to natural abilities. Therefore, it is tempting to extend the enhancements as much as possible to make the enhanced soldier close to perfection, (i.e., optimal fighting efficiency). What will remain of the human being in this case, or of the simple fragile shell of equipment protecting him while at the same time ensuring multiple automated capabilities?

Will he be a soldier carrying one or more enhanced weapons systems, or will he be reduced to a mere player on board a hyper sophisticated weapons system, thus constituting its justification? To an extreme degree, the increase therefore passes from the *cobot* (collaborative robot; the machine assists the fighter) stage to the *robot* stage (the machine does everything; the soldier disappears), and we know then that we are entering the risky field of automated lethal weapons.

The robot is the sum of all possible enhancements. It is the ideal fighting agent, devoid of human frailty, lacking (in principle) emotions, conscience, moods. This hypothesis is not so extreme; the example of drones shows that "dehumanizing" a weapon system offers many advantages. Here again, science fiction gives us many examples of cyborg armies. The logic of the enhanced soldier leads us to it.

There is no question of falling into the misery of all the Cassandras of artificial intelligence who envision a world in which man is relegated by dominant robots. If this scenario

is to be avoided, however, we must also see the positive side and encourage healthy debate regarding the place of man in relation to the machine, human consciousness in relation to the algorithm, and ultimately—the heart of the subject—artificial intelligence in relation to natural human intelligence. The countless human, social, ethical, and legal problems raised by this topic have already begun to be studied with rigor because the stakes are enormous. digital technology, and therefore "naked." At first, he would be equal to the ordinary citizen. However, if we consider certain enhancement possibilities, especially chemical and pharmaceutical, and, of course, if we avoid the fantasy of genetic or genomic improvement, it is a safe bet that the soldier will benefit from pharmacological techniques and biological means superior to those of the civilian. This trend is already under way. Many authors have committed

It is tempting to extend the enhancements as much as possible to make the enhanced soldier close to perfection, (i.e., optimal fighting efficiency).

## Enhanced Soldier or Enhanced Citizen in Uniform?

This question might seem trivial if it did not allow social superiority of some compared to others.

Let us start from the assumption (almost Athenian in its concept of democracy) that the soldier is a uniformed citizen. The citizen benefits from numerous technological enhancements, and the progression of these technologies for the general public seems exponential. Men and women will emerge from this social substratum who will enlist and become soldiers. These soldiers will continue to benefit from the technological progress available to any citizen. In addition, however, the new soldiers will have access to the specific enhancements related to their military jobs before anything else is available for the general public.<sup>2</sup> Will they then be considered super-citizens because having enhanced capacities and technologies offer them real superiority and exorbitant powers compared to the general population?

This debate may seem ineffective and pointless. How would it be different from the current situation, where the military already has considerably greater human and technical resources applicable to war fighting than ordinary citizens? The soldier has his own means of superior knowledge, anticipation, protection, and action (and for many, it is strictly reserved). He is a de facto holder of a considerable advantage often summarized as "force control." Direction on the use of force, the rules of engagement, and military ethics provide a framework and the privileged tools for regulating this dissymmetry of means.

But let us go further and consider the soldier as a mere human being, that is to say without any mechanical or themselves to the salutary reflections about an enhanced soldier who would be superman, or more broadly, who would belong to a superior caste in a democratic society, and essentially about the inherent risks in allowing this social cleavage to develop too far. Obvious ethical, deontological, and legal control mechanisms have to be set in place but doing so, however, should not fall into stereotyped apocalyptic visions like those in science fiction.

#### The Dynamics of Enhancement

Let us draw a parallel with macroeconomic theories. It seems that the topic at hand may be similar to the classic relationship between supply and demand as identified by the economist Alfred Marshall.<sup>3</sup> The demand is the increase of the potential of the soldier, and the supply is all the techniques and technologies that will meet this demand. In classical representations, two lines cross, representing the fact that the more demand grows, the more supply decreases (and symmetrically, the more supply, the more demand collapses). In classical theory it is a kind of an "invisible hand" that regulates supply and demand to achieve a form of equal balance between the two factors.

There are two major issues with this theory. The first is that if the soldier is enhanced, it is most often not he who asks for the enhancement; it is the military and political leaders who use the "demand" in order to maintain the strategic, operative, and tactical advantage. Failure to keep up with technological developments (and thus enhancement) would put the country and its fighters behind peer competitors. The obvious risk here is far more dangerous than reversing the balance of power, which is the key to

tactical success. Some authors have shown the individual's share of the claim.<sup>4</sup>

In keeping with the individualistic behaviors that demand freedom and free will for all citizens and for the military, it is clear that some soldiers could refuse enhancement for various reasons. One might think that the loss of control and initiative would be a major reason for refusal in addition to the necessary efforts required for becoming accustomed to and learning enhancement technology. There may be also some occasions of fear for oneself, for one's health, or for risks of sequelae or side effects that would lead to refusing to use enhancement technologies. It In this regard, it is hard to imagine a fighting unit where some would be enhanced and not others.

The second major consequence to this theory is on the supply side. Researchers and industrialists create the supply through their proposals. There is no need to dwell on the urgent need for companies to innovate and offer new products to remain competitive. With Moore's law (gains from experience in production) doing its exponential work on the logical materiel side, fierce competition from companies and the market share will do the rest to offer a plentiful, constantly renewed supply.

Whatever the angle of analysis, offer, or demand, the

The desire to voluntarily enhance oneself in order to be the best, to be superior, to be able to surpass oneself and to surpass others, is perfectly common in human psychology and can very easily be supported by the latest enhancement technology.

is hard to imagine these behaviors today for a soldier committed to serving. But what will happen tomorrow when the enhancements will be major, when the reflections on their "harmfulness" will affect all individuals, and that the precautionary approach will continue, including among the soldiers, the behaviors of abstention or avoidance?

Conversely, the desire to voluntarily enhance oneself in order to be the best, to be superior, to be able to surpass oneself and to surpass others, is perfectly common in human psychology and can very easily be supported by the latest enhancement technology. Yes, it is highly likely that "enhanced geeks" will emerge on the soldiers' and chiefs' side.

In the economic field, these are powerful demand motivators. Wanting the best for oneself, to be "superior," or at least noticed and remarkable, is the strongest motivating force for recruiting individuals who want to stand out from the group, to appear different if not superior. If this leverage can be considered beneficial to the trading world, in terms of sociology it carries a major risk for the group, creating hierarchies and divisions. For any military community, these differences would jeopardize cohesion. For a long time, military power was built around a strong group cohesion and the absence of singularity. For example, as its name suggests, the uniform does a great job of eliminating singularity, as does homogeneous equipment for the units.

soldier, in principle, is deprived of any choice, even if he feels like expressing many. In fact, his enhancement implies that he endorses the new technology. In doing so, not only does he lose responsibility, but he also abandons a fundamental part of himself to technology suppliers. It is precisely this renunciation that makes him doubly "diminished." Most of the time, he would not have the choice of how to be enhanced and enhancement would ultimately be imposed to him by his hierarchy.

Again, it seems to us necessary to detour on the sociological side and address the work of John Robinson and Geoffret Godbey.<sup>5</sup> These American sociologists showed the impact of a new technology (the washing machine) on the lives of housewives in the 1960s. It was commonly accepted that the introduction of this new technology would free women from unrewarding and time-consuming tasks. However, the time women saved from using the washing machine (more than two hours) was actually used by these women not for themselves, but to do other household chores. Many subsequent works have confirmed this sociological trend: free time, saved time, is used as a "loss," and at worst is filled by administrative time created from scratch.

If we accept that the experience of the washing machine was a metaphor for the effects of an enhancement (better efficiency in washing, saving time, cognitive simplification, saving resources, etc.), it seems logical to imagine



#### Figure. Artificial Ignorance

what could happen to the soldier of tomorrow. What if the enhancement resulted in two antagonistic effects? Of course, the best operational efficiency (e.g., saving time, energy, human resources) but also filling all these spaces of freedom earned by a "nonoperational" or even administrative time (e.g., recording and transmitting the performance indicators of an enhanced weapon system), leads one to question the relativity of gains from enhancement.

#### **Artificial Ignorance**

Few will argue that enhancement technologies are mostly, if not all, based on some algorithm. The algorithm is the essence of what the scientific community usually calls artificial intelligence. This algorithm is the thought of another, or of several intelligences together. It is also the result of robot analysis dedicated to this task, drawing rationality from the so-called data lakes. Everything is ultimately transformed into equations and ends in digital processes. This artificial intelligence is no longer "human." It is not "mine" anymore in the sense that it escapes "my" own modes of representation and thus analysis of an event, a difficulty, or a situation. It leads to a loss of a sense of judgment. Artificial intelligence thus gives an artificially constructed representation of a reality that escapes its own judgment. It provides performance, operational advantage, speed, efficiency, and safety. These are undoubtedly major enhancements. A psychologist would argue that this benefit becomes palpable for the individual to the point that it gives him a sense of power, superiority, pride, and arrogance but also pleasure and enjoyment.

But what the technologically enhanced soldier does not see is that this technological intelligence is no longer his. The enhancements place the soldier under a kind of supervision. He willingly abandons, sometimes without realizing it, many cognitive or reflective tasks that previously encumbered him. In doing so, he loses a number of "natural" sensory skills or abilities, which were certainly less effective, but which were his own.

It can therefore be stated here that the danger that awaits him (like all of us) is "artificial ignorance" (see figure). Let us try to define it. If, as the Larousse encyclopedia says, AI is "the set of theories and techniques used to produce machines capable of simulating intelligence," then it is possible to propose that artificial ignorance is the alteration of the inherent (natural) intellectual and cognitive capacities

of the human being resulting from a simulation, substitution, or replacement by artificial intelligence.

A search for this idea or concept in scientific or popular literature is futile. The expression hardly appears in the basic work on artificial intelligence. And again, it is only to serve as a substrate for all questions relating to uncertainty and inaccuracy in algorithm construction. This theoretical absence of ignorance in the AI field, and thus in the field of the enhanced soldier, shows us the great confidence that we of incompleteness, that the human brain is still capable of producing a system (he referred to it as "declaration") that is impossible to solve by a machine (it will not be able to prove anything).<sup>7</sup> He argued that only the (natural) consciousness can see the paths to a solution. He wanted to say that the correct determination of the truth (or its falsity) of a reasoning can only be based on the human mind, so that the human mind cannot be reduced to a simple mechanical process. The famous

A possible subject of study for the students of the Command and General Staff College might be about the artificial intelligence of a staff.

have in AI that may be blind or may be exaggerated. Only a few recent publications (by Elon Musk, Bill Gates, and Stephen Hawkins, among others), quite apocalyptic indeed, predict the end of the man deprived of all consciousness by artificial intelligence.<sup>6</sup> Some critics are also emerging from among Silicon Valley thinkers, but it is more to denounce the hegemony of AI and promote transhumanism than to highlight the consubstantial loss of our own reflective abilities that we call artificial ignorance here.

Moreover, the scientific literature on AI and its risks shows only the potentially devastating effects of an "all-digital" world, as if that world and AI technologies were "next door" to the man of flesh. There is little or no evidence of the effects of AI on the development of natural intelligence. For example, regarding the effects on development and then on brain function and its natural capacities in children: are they also enhanced, or as we suggest, do they suffer a loss, what we call artificial ignorance, of everything that our natural intelligence, superseded by AI. Will they no longer learn, know, and realize?

Loss is, in my opinion, not about raw intellectual performance. It concerns these essential qualities of adaptability and agility. And there will be no mention here of emotional intelligence, largely present in AI theories as the capacity of "consciousness" of AI. Again, science fiction offers us archetypes like the Terminator, a killer robot that ends up humanizing itself by becoming "aware" of certain realities. This notion of consciousness (of the soldier) seems cardinal. Kurt Gödel had shown very well, with his famous theorem

Alan Turing experience gives him reason, at least, so far. On the military side, a Carl von Clausewitz today would probably say the same thing: the machine (AI) is not able to "realize" the fog of war, and only the soldier's mind, the strategist, can understand the insoluble.

To go beyond the strict framework of the enhanced soldier and to try to address the problem of ignorance in the collective sense, (e.g., of a military organization), it seems necessary to bring back not only economy but also strategy; that is, the theory of marginal advantage. Leading corporate strategists have long recognized that under the principle of supply and demand, the winning strategy is limited to two instances: either the technology (which supports supply and causes demand) is at least 10 percent more expensive than existing technologies, or it is 10 percent cheaper.

Military strategists, for their part, introduce the balance of power, a notion that also imposes a significant marginal advantage vis-à-vis the enemy to hope for success. Everyone knows the strength of a block or a chain, and these things are only as good as their most sensitive components or their weakest links. There is no doubt that tomorrow an "enhanced" combat squad will only be as good as the less enhanced soldier.

Here we must digress. The literature on the subject speaks only of the enhanced soldier, and sometimes goes a little further to address the issue of the collective, seen only in the prism of a rather hyperhomogeneous group of enhanced soldiers. But the question of the group regards the enhanced social entity fighting. Have we asked the leader?

Where does one find the concept of "enhanced leader"? This question takes a new turn when we recognize the considerable importance of AI in decision-making processes (and in the knowledge and anticipation that are the key precursors to it). Let us admit that there is a considerable will impose their own standards of enhancement? At the same time, will we be able to accommodate "unenhanced" allies in our operational arrangements? There is obviously no definitive answer to these questions today, but they are worth considering.

# Enhancement without conscience is only ruin of the soldier.

space not yet analyzed but which we think is absolutely fundamental. A possible subject of study for the students of the Command and General Staff College might be about the artificial intelligence of a staff. What about the artificial intelligence of the military leader?

Finally, on these points, another aspect of the contemporary operational collective should be mentioned. In remaining on different levels, it should be customary that this deployed operational array is multinational. How, then, will the enhanced soldiers, taken individually and Finally, far from the scope of this article, technological enhancement, as a national engineering and industrial capacity with a very high potential for innovation, interferes with the logics of the defense industrial and technological base.<sup>1</sup> The base is named the Defense Industries, and is managed whether strictly nationally or in multinational sharing communities. The dynamism and the investments that will be made will be the key, because without a doubt, where the start-ups are located in the world, tomorrow the pages of the tech-

Enhancing Soldiers, A European Ethical Approach is a compendium of the proceedings of a symposium sponsored by the International Society for Military Ethics in Europe, held 16 October 2019 in Paris, that provided a venue for the presentation of papers by a variety of international scholars discussing research on topics related to initiatives associated with efforts to enhance soldier capabilities. The symposium revisited and updated issues that were previously examined in a similar symposium titled "The Enhanced Soldier: The Needs and Prospects of Increasing the Fighter's Abilities," sponsored by the French army 19 June 2017 at the headquarters of the French Armed Forces. The compendium is available online at: <u>https://www.euroisme.eu/images/Documents/pdf\_cahiers/</u> Le%20soldat%20augmenté%2019-06-2020-web%20VFinal.pdf.

collectively, be consistent with the different enhanced cultures and technologies in participating nations?

Will we be able, with only our national capabilities, to maintain the means to benefit from the enhancement technologies necessary for the French soldiers to remain among the "court of the great" nations that own and master these innovative technologies and that needed as purely scientific or technical reflections on major emerging technological advances. In this field, transhumanism alone is an exciting theme for the soldier.

Since Isaac Asimov, science fiction has created a vision of tomorrow's soldier, a sort of decerebrated clone, an almost-robot whose superiority lies only in its enhanced capabilities compared to the standard citizen.







nological enhancement of the fighter will be written.

We cannot conclude

of ethics and philosophy.8

famous François Rabelais

conscience is only ruin of

is great to paraphrase it to

say, "enhancement without conscience is only ruin of the soldier." These reflections are

quotation, "science without

the soul," and the temptation

without mentioning the fields

It is worth digging up the

**Ethics of** 

Enhancement

Just twenty years ago, the film *Welcome to Gattaca* showed us the risks of a world where enhancements would apply to the most suitable genomic selection. Let us not forget that Voltaire had already identified this risk among Prussia's King Frederick II's five-foot-sixinch soldiers in his novel *Candide*.

Far from technological prowess, years of research, brilliant technologies, and ultrasophisticated weapons systems, the enemy who today faces Western armies is often only a "naked" man. His military equipment is limited to a pickup truck, a pair of mismatched sandals, and a Kalashnikov, or with even more rustic and rudimentary weapons as shown in the sad series of recent terrorist attacks in large western cities where blades or Ram trucks were used. This example alone illustrates the paradox of progress; that is, should we enhance, enter into a fast-paced technological race, and search faster, higher, and further?

Does not the search for enhancement pose a new risk of escalation like it did in the race to conquer space during the Cold War? The history of men, weapons, and war gives us a first answer. The technological race is not only inevitable, it is also beneficial. Military technologies, as we know, have ushered in and generated thousands of civilian technologies. But do we agree that enhancements introduce new questions?

Should we collectively think of a new paradigm, that of a major revolution in which man, whether he is a fighter or not, will be enhanced and in which the fundamental principles of our civilization, including freedom, equality, and brotherhood will have to be reexamined in terms of the technologies that will have a profound impact? Without lyricism, our common future and that of our children may be well, and always the naked man, in his unenhanced humanity, but perfect in many ways. Perhaps tomorrow he will need to be placed in front of exponentially increasing technologies that will change his relationship to others and his environment as well as his own existence. Specific monitoring mechanisms—ethical, deontological, and legal—must be developed to avoid falling prey to an apocalyptic vision.

These reflections are absolutely essential and exciting because they contain real innovations and are the fundamental bedrock of the real paradigm shift represented by the enhancement of human capacities. The major challenges of wanting, knowing, and being able to adapt them to the soldier of tomorrow will remain!

#### Notes

1. Joseph Schumpeter, *Capitalism, Socialism and\_Democracy* (London: Routledge, 1976), 82–83. Creative destruction is the "process of industrial mutation that continuously revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one."

2. See the very enlightening definitions of "enhancement" provided by Gérard de Boisboissel and Jean-Michel Le Masson in their associated article in this series, "The Enhanced Soldier: Definitions."

3. Alfred Marshall, *Principes d'Économie Politique* [Principles of political economy], bk III (Paris: V. Giard et Brière, 1906), 137.

4. Jean Claude Kaufmann, *Ego: Pour une Sociologie de l'Individu* {Ego: For a sociology of the individual] (Paris: Nathan, 2001); Gilles Lipovetsiky, L'ère du vide, essai sur l'individualisme contemporain [Ego: The era of vacuum, essay on contemporary individualism] (Paris: Gallimard, 1983)

5. John P. Robinson and Geoffrey Godbey, *Time for Life: The Surprising Ways Americans Use Their Time*, 2nd ed. (University Park, PA: Pennsylvania State University Press, 1999).

6. "Elon Musk, National Governors Association, July 15, 2017," YouTube video, posted by "Space Policy and Politics," 16 July 2017, accessed 4 August 2020, <u>https://www.youtube.com/</u> <u>watch?v=b3lzEQANdHk;</u>

Bill Gates and Mary Ann Mackin, *Showing Up for Life: Thoughts on the Gifts of a Lifetime* (New York: Crown, 2010);

Rory Cellan-Jones, "Stephen Hawkings Warns Artificial Intelligence Could End Mankind," BBC, 2 December 2014, accessed 4 August 2020, <u>https://www.bbc.com/news/technology-30290540</u>.

7. Kurt Gödel, "Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme I" [On formally undecidable sentences of Principia Mathematica and related systems I], *Monatshefte für Mathematik und Physik* 38 (1931): 173–98.

8. See the associated article in this series by Professor Dominique Lambert, "Soldiers and Virtual Reality: A Fundamental Ethical Approach."

US ISSN 0026-4148