Every morning on my way to get coffee, I walk through the Future Forces Gallery, a new addition to the Naval War College. The space is filled with models of unmanned systems, robots, and articles about the future of unmanned technology. A PowerPoint deck plays in the background, detailing the autonomous systems of
the future. And every morning, it makes me angry. In a room filled with “future forces” there are no actual forces; at least, not human forces. Just machines, with no one maintaining, operating, or leading them.

It’s easy to shrug off the omission. Machines, unlike manpower initiatives, are tangible. We can see them, grasp them, and understand what effects they may bring to the battlefield. Because of this concreteness, the defense community spends a lot of time discussing future technologies and weapon platforms when planning for the future force. But the reality is that machines are only part of the future force. With the pace of current technological change, future force architects should care just as much about the people that man the forces as they do the machines. In the future, militaries will not have time to contract out new software updates, radar tracking algorithms, or imagery analysis programs. The U.S. Department of Defense will not have the luxury of relying on National Security Agency civilians to provide technical assistance to cyber operations (something which recent reports suggest may not be a given either). The world’s leading experts on emerging technologies will have to be on ships, in airplanes, embedded at the front line of the battlefield, and on decision-making staffs.

And here the United States has a huge problem — much larger than the annoyance on my morning coffee route. We are losing our competitive advantage in the Manning, recruiting, and retaining of the future force. This is already happening within some of the specialized warfighting communities. The Air Force is experiencing a potentially existential shortage of pilots for both manned and unmanned aircraft. Additionally, in the cyber community, research has already identified large shortfalls in both civilian and military personnel. And that’s the good news, because the problem has been identified. There are no metrics for shortages on “technologists” — including software programmers, network architects, hackers, database engineers, and artificial intelligence developers — because these skill sets are largely uncategorized as mission specialties.
This leads to vitally important questions for the future of U.S. defense: What does the warrior of the future look like? What are the roles and missions the United States will need to prepare its people for? What are the technologies those warriors must master in order to succeed at their mission? According to the advocates of the third offset, the victors of future war will be those states that are best able to harness autonomy and human-machine integration. In contrast to the first or second offsets, in which the United States was able to double down on the development of physical components of technology (tactical nuclear weapons, precision-guided munitions), the autonomy arms race is all about talent and manpower.

A recent Washington Post article chronicled the drive for technology under the third offset with the title: “Future Wars May Depend as Much on Algorithms as on Ammunition.” It went on to discuss the $7.4 billion defense investment in big data and artificial intelligence. While these seem like machine (and therefore not human-focused) initiatives, the vast majority of the investment in research and development within fields like machine learning and big data analytics is in the developers, programmers, and engineers — not the hardware. Harnessing autonomous research for national defense will be the role of technologists, not technologies. The future force of warriors will be made up of computer programmers, air defense commanders with expertise on the algorithms that undergird their weapon systems, sailors able to reconfigure battle networks while taking fire, hackers in deployed locations and at home, and big data analysts in forward operating bases and staff commands. Whether the future warriors are directing technology on the battlefield or remotely, they will need to adapt to high-tech threats to high-tech machines in real time.

Further, while manpower problems are often framed as an issue for existential conflicts, solving manpower issues is increasingly vital to winning conflicts in the gray zone. Gray zone conflicts — defined by limited wars, coercive missions, and deterrence — are increasingly dominated by technological innovation. Cyber
deterrence are increasingly dominated by technological innovation. Cyber, space, the electromagnetic spectrum, and information are all contested on a day-to-day basis. Winning in the gray zone, unlike the large armies of territorial conflict, is battled from long distances by remote operators who influence and change adversary behaviors from behind keyboards instead of from gun sights.

The Culture Problem

After a recent Defense Innovation Board meeting, Eric Schmidt launched a strong critique of U.S. technology talent recruitment, warning that “the talent is there, but I have a feeling they’re not coming to you. Trying not to be blunt...” Why aren’t they coming to the Department of Defense? There is the obvious money problem. Silicon Valley artificial intelligence specialists are paid salaries up into the millions and tech giants are increasingly competitive as they vie against each other to recruit the best and the brightest in hard to fill technological fields. This has turned the current civilian technology arms race into a race for “human talent, which is far more scare than either data or computing power.” It’s doubtful that the U.S. government is going to compete when it comes to salaries.

However, the U.S. military has overcome salary problems before and studies from other hard to fill specialties suggests that many Americans are willing to work for less in order to support their country. Part of the problem in recruiting these highly sought after technologists is organizational: training pipelines, commissioning procedures, billet allocation. The good news is that there are more initiatives within the services to try and solve some of these organizational impediments towards generating the future force. The Army has begun a direct commissioning program, the Marine Corps is experimenting with allowing cyber personnel to skip the Basic School, and the services are looking towards the reserve and guard to harness civilian experience and talent in the Department of
These are important steps to solving the future force problem, but they won’t help with a potentially larger issue: the American military’s own cultural biases toward what a warrior looks like. At a recent cyber event, one of the Navy’s leading cyber officers asserted that the Navy was going out of its way to think about recruiting cyber personnel. The officer talked about many of the organizational initiatives highlighted above: lateral hiring, direct commissions, and leaning on the reserve and guard. But then the officer added, jocularly, “this is still the military . . . we’re not going to let them have blue hair or anything.” That got a loud chuckle in the room filled with military personnel.

But this may be one of the fundamental problems with the development of the future force. What does anyone care about the color of hair cyber warriors have? So much of what we as a society think is a military warrior is based on our cultural understandings of what the military caste looks like — a problem that may be exacerbated as the civil-military divide continues to grow. Why doesn’t the military like blue hair? There is the obvious problem of attracting more attention than desired in a firing zone. However, more fundamentally — especially for those not on the front lines of a ground offensive — blue hair may symbolize a threat to the good order and discipline of the armed forces. Blue hair is not uniform and therefore those with blue hair cannot be trusted to follow orders.

The same arguments have been made about tattoos and beards — grooming standards that have not only been hindrances for recruitment, but also detrimental to many combat missions. It’s now standard practice for special operations forces to wear beards while deployed in the Afghanistan or Iraq. In fact, the history of military grooming standards is rife with cultural anachronisms. Marine recruitment standards of the 1960s called for women recruits to “be the most attractive and useful women in the four line services” and regulations required “lady Marines” to wear lipstick to match the Scarlett braid of Marine hats. Allowing military members some level of personal choice in their grooming could...
be a low cost and easy recruitment and retention measure. Further, looser grooming standards don’t necessarily have to come at the expense of the mission when the mission is re-programming digital threat files, developing algorithms for analyzing imagery, or finding zero-day vulnerabilities.

The logical question that comes next is what fitness standards matter to the future force. This has been a particularly contentious issue and one that has figured in the foreground of many gender-integration debates. Fitness requirements should reflect the needs of the mission and therefore the future warrior’s health standards should better represent their combat and day-to-day duties. In general, there is a baseline of good health that should be required whether you’re sitting behind a computer terminal or on a foot patrol. But beyond good health, many of the more technical mission sets probably don’t require two miles, 50 push-ups, and 50 sit-ups. In one of my last assignments in the active duty Air Force, I was a director of operations of a squadron with about 150 people. My airmen performed highly technical work that was very difficult to staff and train. We never had enough people. Despite that, we had to kick out multiple airmen because they were unable to complete their physical fitness tests. They weren’t undisciplined at their mission. They were very good at their mission, but they were not good at fitness. I would have much rather been able to retain these airmen than try to fill their spots with airmen that passed the physical fitness test but couldn’t perform the technical mission.

Moving Forward

The point is not that everyone needs to have blue hair or relaxed fitness standards, but that the architects and planners of the future force need to have the conversation. What does the future warrior look like? What skills does the U.S. military need its personnel to have in order to win wars? What skills are not necessary? What is necessary to recruit and retain them? At CyCon US 2017, a cyber officer on a manning panel — hair high and tight, uniform impeccably put together — put forth a passionate argument that the military wouldn’t have a
problem recruiting people. Why? Mission! And while I believe he is right that the U.S. military has an extraordinary mission and an extraordinary citizenry that wants to support this mission, I fear this kind of thinking will not solve the future forces problem. Instead, defense leaders need to evaluate what cultural barriers may exist that keep top talent from joining the military. Then, they need to examine which of these cultural requirements are core to military missions and which can be discarded. This means that grooming standards, fitness requirements, and professional responsibilities may be tied more closely to missions and duties than over-arching service identities. This also may lead to new mission specialty designators for technologist fields like software engineers, computer scientists, and data analysts. Finally, the services need to implement the organizational innovations emerging from many of the Defense Department’s cyber organizations as well as over-arching manpower reforms like those advocated by former Secretary of Defense Ashton Carter’s Force of the Future initiative.

Fundamental to military innovation is the ability for states to adapt to change and integrate operations, doctrine, strategy, manpower, and technology to create a theory of victory. The U.S. military has devoted immense resources to technology, but the future forces will fail without humans designing, adapting, operating, and maintaining the technology. The defense community needs to do a better job thinking about what this human looks like and how the U.S. military culture can adapt not only to technology, but what we need for the warrior of the future. Despite the best efforts of Carter, the Force of the Future initiative suffered an ignominious death, a sign of how deep military culture biases against manpower reform may run. This will be a difficult effort and one that forces the armed services to question what being a military member looks like, something that has huge implications for our military culture and our society.

As for my Future Forces Gallery problem, I made a noble attempt to solve the issue. I infiltrated the space with a team of uniformed figures, equipped with laptops,
headsets, tablets, blue hair, man buns, and red highlights. My future force survived the winter break, but in the end suffered the same defeat as Carter’s initiatives. I was asked by the robotics and unmanned systems chair to take down the figures as they might unduly suggest that our institution condoned radical appearance in uniform. For the record, my institution has no official opinion on this. But I do. I condone it. Because the future is not unmanned, it just may be manned with the kind of people we didn't expect.

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Image: Air Force/Christian Clausen