Armenia’s Science and Technology Future:

Missed Opportunities or a Pathway to Sustainable Transformation?

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CSUN

Keynote Address

By

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Let me start by thanking the ARPA Institute and the Armenian Studies Program at California State University, Northridge for organizing this timely and important conference and for inviting me to offer the opening keynote. I am honored to do so and to share the podium today with such a distinguished line up of presenters.

As we gather today to celebrate 30 years of the ARPA Institute working in partnership with Armenia, we can look back to see how far we have come and celebrate the impact of the dedicated work of so many. Indeed, if this celebration were held two years ago, I expect our theme would be one of optimism for the future as we recognize the strides we have taken to establish the future of Armenian science and technology. And yet, that optimism today is tempered by the realities of our geopolitical circumstances, coming on the heels of war, economic and political disruption, and a global pandemic. Despite these challenges, some will argue that the work of the ARPA Institute and many others in Armenia has created opportunities for real change. Others will lament that little change has indeed taken hold, pointing out that the broader infrastructure and investment in education and research needed to support a strong, cutting edge science, technology, and innovation economy still is in its early stages of evolution.

As we contemplate the current state of affairs, we must ask ourselves if these early successes are sustainable, laying the foundation for real transformation, or whether they represent missed opportunities teasing us into believing we are moving forward when in fact little real change under the surface has taken root? Wherever the truth may lie, we can all agree that there is an urgency to the changes about which we have been speaking over these last years. It is no understatement to say that how we respond today will be critical to what the future will hold.

So let me take us back to the year the ARPA Institute was founded, 1992, and the challenges and hopes facing the newly established Republic of Armenia. As many of us witnessed in those early years, Armenia faced many challenges. Engulfed in war with neighboring Azerbaijan, fighting for self-determination in Artsakh, still recovering from the aftermath of the devastating Spitak earthquake in 1988, facing hours of darkness every day, the road ahead paradoxically looked both dire and hopeful. Armenia’s newly established independence was a dream come true for many of us in the Diaspora and a call to do all we could to honor the martyrs – now Saints – of the Armenian genocide by ensuring our first independent homeland in 500 years had a chance at peace and prosperity. Despite these many challenges—or indeed, perhaps because of them—forward looking Armenians established impactful institutions like the ARPA Institute. And what made ARPA special was its targeted, clearly focused mission on science, technology, energy and healthcare, all critical to the health and wellbeing of the new nation. As just a few examples, ARPA helped organize the first energy conference in Yerevan in 1992 that led to the decision to re-start the Medzamor Nuclear Power plant. Thirty years later, it has turned its attention to green energy and sustainability. It established the Sarko Tilkian Blood Bank in Erebuni Hospital and helped establish the Gyumri blood bank, addressed health education, particularly around smoking and heart disease, and has made significant contributions in the areas of science, technology, education, and innovation.

As part of its commitment to the development of competitive and cutting-edge science, technology, and innovation, ARPA recognized early on the importance of educating and creating opportunities for the next generation of Armenian scientists and innovators. While we all are aware of Armenia’s strength in science and technology during the Soviet era, there was real concern that without intentional effort, that rich history was at risk. Many rightfully recognized the importance of building on that legacy and ensuring that it didn’t fade into history, and understood that without intentional investment and support, Armenia’s young talent would leave Armenia to find a better environment in which to develop their potential. Indeed, some have called the generation that came of age during the immediate post-independence1990s the lost generation, as so many left Armenia to seek their fortunes and raise their families elsewhere. This is where ARPA’s investment in young scientists and innovators plays such an important role, with the goal of keeping Armenian talent in Armenia, ensuring it has the early support and education to develop its talent, create new pathways for innovation and product development, and become a regional center of scientific knowledge applied to the most urgent challenges of the day. In this context, I draw your attention to the annual Invention Competition ARPA established for young scientists and its promotion of tech transfer through technical seminars that bring experts from Los Angeles and other parts of the Diaspora to encourage and support research and entrepreneurship in Armenia. This is an important foundation for the future.

Now the ARPA Institute hasn’t done this alone. Many others have been working and investing in Armenia over these last three decades – from the establishment of the American University of Armenia (AUA), the TUMO Center for Creative Technologies, the Armenian Wellness Center, the Children of Armenia Fund (COAF), the Foundation for Armenian Science and Technology (FAST), the Enterprise Incubator Foundation (EIF) at the Gyumri Technology Center, and so many more. Indeed, the development of science and technology and a robust educational pipeline in these fields is central to successive Armenian government’s strategy for economic development, capacity building, and strategic growth. And, as the recent 44-day war made painfully clear, a strong technology strategy and capacity building initiative also is critical to Armenia’s defense and territorial integrity.

There are numerous significant efforts underway, both within Armenia and throughout the Diaspora, that defines Armenia’s economic—and, by extension, democratic—future through the lens of science and technology and locate strategies for enhancing science and technology at the national level. Previous leaders of the Republic of Armenia—presidents and prime ministers—have recognized that the emergence of an independent Armenian independence fulfilled long held dreams of Armenians worldwide. For these Armenian leaders, such mastery of our own destiny was only possible by leaning into our scientific and technological strength and potential, and led to the establishment of the Ministry of High-Tech Industry to create a locus for such development. Likeminded strategists also recognized that such an approach needed to involve multiple sectors – economic and innovation, of course, but also finance, government, civic life, and education. Armenia certainly is making gains in each of these areas, but with every step forward, it seems we are taking at least a half step back – and at times, like during the 44-day war, we are knocked back even more. Let’s take them one by one:

* *Economic and innovation*: Clearly there is a healthy technology ecosystem developing in Armenia, which is becoming known in some circles as a Smart Nation. The arrival of hundreds of talented scientists, engineers, creators, and innovators from Russia in particular as a result of the Russian-Ukrainian war has the potential to build expertise and capacity in these high demand fields. Indeed, if these technologists and innovators are integrated into Armenian life and industry they have the potential to jumpstart Armenia as a scientific, financial and technological center in a way similar to the impact of Jewish refugees to Israel in the early 1990s, where the original Smart Nation grew in leaps and bounds and now is recognized as a global leader.
* *Educational reform*: Some good work has been done in this arena, but there is still much to do if Armenia is to build the pipeline of talent needed to fulfill its strategic, economic, and national goals. Clearly the establishment of the American University of Armenia has had a significant impact on building academic excellence, especially with the launch of the undergraduate programs. But there is much to be done to ensure AUA and its sister higher education institutions such as Yerevan State University, the Polytechnic, French, and Slavonic Universities, State Pedagogical University, the Agricultural University and other higher education institutions need to develop into globally respected institutions, with high standards of excellence and more robust research initiatives that will allow Armenia to transition fully to a knowledge-based economy. The impact of the TUMO Center for Creative Technologies and the AYB School are inspiring. But the real challenge is in creating reform in the public K-12 sector, not just in Yerevan but in the provinces as well. Certainly Teach for Armenia has had a positive impact in addressing broader elementary and secondary education, and plans for a Science and Technology High School as well give us hope. But fundamental transformation is still a ways off and only will be possible with government support and meaningful investment and a willingness to rethink structures, policies, and infrastructure. The growth of online education and opportunities as a result of the Covid-19 pandemic should make more tools available in all kinds of areas to support a growing and forward thinking educational ecosystem.
* *Government and civic life*: While Armenia long has valued education and science, technology, and entrepreneurship, it remains challenged in areas of civic life, diplomacy, and building the institutions of governance. Good work in underway, but there is much more to be done. The crack-down on corruption, and an insistence on integrity, ethics, and excellence are critical to Armenia’s future success. I see developing maturity in governance and civic life as an urgent challenge that must be addressed head on. It is no understatement to say that Armenia’s future depends on addressing these governance and policy questions—both foreign and domestic—honestly and with a focus on the future survival and well-being of the nation rather than personal status or wealth.

The second approach, a holistic approach to Armenia’s future called *The Future Armenian*, was launched by philanthropists Rouben Vardanyan and Noubar Afeyan over a year ago to align Armenia’s growth with the seventeen United Nations Sustainable Development Goals and create a global umbrella under which to bring together Armenia and the Diaspora in an effort to chart a sustainable course for the future. These efforts—which complement Armenia’s national strategy as described above—grew out of the work Vardanyan and Afeyan had done in Armenia for almost 20 years – two of their well-known initiatives are the Aurora Humanitarian Foundation and its Aurora Prize and FAST, the Foundation for Armenian Science and Technology. *The Future Armenian* is an all-encompassing initiative that recognizes the intersection of multiple sectors and initiatives in finding creative solutions to the challenges of the 21st century. And because it is aligned with the UN sustainable development goals, it places Armenia and its strategies in conversation with global approaches to similar problems. The vision represented in *The Future Armenian* initiative encompasses four elements that look to anchor Armenia in a global environment, a recognition that Armenia is a global nation comprised of both the homeland and the Diaspora.

Whether you subscribe to the vision of Armenia’s national leaders or the vision of the prime movers behind *The Future Armenian*, or other initiatives such as the newly launched Armenian Society of Fellows (ASOF), a non-partisan society of scholars and thinkers dedicated to leveraging Armenian expertise and global networks to build capacity in all sectors of Armenian society, or the ARPA Institute, or any of the many initiatives focused on sector specific solutions, clearly much has been done and much more is left to do. Somehow the future seems both possible and fragile at the same time.

Fortunately for Armenia’s strategic growth in the area of science and technology, the years of independence parallel the period of global digital transformation, with the rise of the internet, the movement into cloud computing, data analytics, artificial intelligence and machine learning, smart technology, the internet of things, blockchain, quantum computing, biotechnology, and now Web.03, and the global center of innovation is in Silicon Valley, California, one of the strongest centers of the Armenian diaspora. I live in Silicon Valley and served for the last five plus years as president of San Jose State University, the largest single supplier of university-trained talent to Silicon Valley companies. And during my time in Silicon Valley, I regularly met – and continue to meet – Armenian innovators from Armenia who have relocated to California in hopes of finding financial support, talent to ensure capacity and growth, and networks to leverage impact of their ideas. There isn’t a tech company in the Valley where one can’t find an Armenian, whether originally from Armenia or the Diaspora, driving value and innovation.

At the same time, innovators globally are discovering Armenia. Participation in the 2019 World Innovation Summit was robust and FAST continues to execute on its strategy and looks forward to hosting its 2022 Global Innovation Summit in October. While all of this brings innovators to Armenia and showcases Armenia’s talent to a global audience, it is only important if the networks and talent development in cutting-edge science and technology follows with good government policy, financial support, educational reform, and strong business practices. The beginnings are there but they remain fragile and needing care and attention to survive the geopolitical challenges facing Armenia and its region. Perhaps even more important for ensuring these opportunities are not missed is the role of innovation and technology as a bridge between Armenia and its Diaspora.

Some good signs are there. A pioneer in bringing Silicon Valley to Armenia is Synopsis, a global semi-conductor company. Led by Dr, Yervant Zorian, Synopsis’s Chief Architect and Fellow, Synopsis has worked in Armenia for a number of years, creating jobs, developing the technological infrastructure, and adding capacity to the tech talent pipeline. Recently, as another example, Nvidia, another well-known Silicon Valley technology company, announced it is locating an R&D arm that focuses on computer graphics in Armenia. And who is the driver of this decision? A Diasporan Armenian, Rev Lebaredian, who long has been tasked with developing global sites for Nvidia and serves the company as VP overseeing the development of the omniverse, Nvidia’s entry into the emerging immersive technology sphere. As Rev said in an interview when he announced Nvidia’s move into Armenia, the talent finally was there to enable the company to grow and thrive in Armenia.

And there are inspiring examples of early stage innovators who are looking to solve problems in creative ways. Take, for example, the story of Dr. Narine Hall and InSpace. Narine was born in Armenia and participated in Lycos Armenia, an information technology and internet portal company that operated in Armenia from 2000-2008. As Narine explained to me recently, she gained hands-on experience in web design and IT through Lycos, which led her to apply for an advanced program in Vermont. Narine relocated to the United States, completed an advanced degree in computer science and complex systems, began an academic career and recently launched InSpace as an answer to Zoom and zoom fatigue experienced by her students. Narine looked to partner with Armenian talent, and has located her engineering team in Armenia, creating jobs and creating a bridge between the Diaspora and Armenia. And there are many more such hybrid companies in Silicon Valley and globally, in the area of sustainability, green energy, biotechnology, and so much more, wherever Armenian Diasporans outside Armenia live. As these products and companies grow and gain market share, supported by venture funding in Armenia and Silicon Valley, they create jobs and a strong economy, which in turn leads to more active civic life.

It certainly will be important to foster, create and support networks of opportunity for the rising generation that takes advantage of Armenia’s natural global network of Armenians in the diaspora. The presence of global companies such as Nvidia, Synopsis, IBM, Cisco, VMWare, Siemans, Xilinx, Amazon, Adobe, Google, and others in Armenia, as well as those built by Armenians such as Krisp, Picsart, Service Titan, just to name a few, will continue to ensure Armenia has a healthy and growing economy. Indeed, the tech sector grew by 5.3% last year, outpacing all other sectors of the economy.

I have confidence in the emergence of the IT ecosystem while also recognizing that there still is much work to do. The Ukraine war, while tragic in so many ways, has led to the relocation of science and technology talent from Russia – both Russian and Armenian – to Armenia as a place with an infrastructure and ecosystem to support innovation and growth as a Smart Nation. The real question for all of us is whether the civic infrastructure is maturing; whether educational reform, from the K-12 pipeline to advanced university education and cutting-edge research can thrive; and whether Armenia’s leadership will see education, science, technology and innovation as foundational to Armenia’s economic growth and be willing to invest even more intentionally in developing the innovation and industry centers where such work can develop and grow. Such investment in innovation, education, and scientific development, at the same time, is central to Armenia’s defense. This is a point that we cannot overstate. We all can remember the impact of cutting-edge drone and other technologies on Armenia during the 44-day war. The efforts by AUA and FAST, as two examples, to educate the military with higher science and technology skills are important initiatives that bring together the work of organizations such as the ARPA institute, the business and technology sector, and education and research.

But I return to where I started. Is this change fundamental or fleeting? The commitment of institutions such as the ARPA Institute and so many more certainly give Armenia a chance to weather its current challenges and emerge an important regional player in IT, healthcare, finance, education, green energy technology, and so much more. But unless fundamental reform in education takes hold across the country and not just in elite schools, and unless Armenia achieves more civic and diplomatic maturity and strengthens its democratic institutions, unless Armenian leadership continues its efforts to reduce corruption, there will be clouds on the horizon. Finally, while I see challenges ahead, I remain optimistic for the future. The 44-day war served as an existential wake-up call for the global Armenian nation. And it will take the global Armenian nation—the Diaspora and Armenia proper—to ensure our collective future. We must be honest about the challenges, continue to work together to find solutions, be prepared to invest our time, expertise and resources strategically, and recognize that progress is uneven, if we are to leave to our children an Armenia of which we can all be proud.

Thank you