BIOGRAPHIES

NOVA

PAULA S. APSELL

Senior Executive Producer, NOVA;
Director of the WGBH Science Unit

As Director of the WGBH Science Unit and Senior Executive Producer of the PBS science series NOVA, now its 40th season, Paula S. Apsell has overseen the production of hundreds of acclaimed science documentaries, including such distinguished miniseries as *The Fabric of the Cosmos* with Brian Greene, *Making Stuff: Stronger, Smaller, Cleaner, Smarter*, hosted by *New York Times* technology reporter David Pogue, *Origins*, and *Evolution*. In 2005, Apsell introduced a spinoff in NOVA scienceNOW, a critically acclaimed science magazine series. Today, NOVA is the most watched primetime science series on American television and has won every major broadcasting award, including the Emmy, the Peabody, and the duPont-Columbia Gold Baton. Apsell has been recognized with numerous individual awards, including the New York Hall of Science's Distinguished Service Award for Public Understanding of Science and the Carl Sagan Award given by the Council of Scientific Society Presidents. She has served on several boards, including that of the Smithsonian's National Museum of Natural History and Brandeis University's Science Advisory Council. She is also a trustee of the International Documentary Association.

DAVID A. DEPTULA

Lieutenant General, USAF (Ret)
President, The Deptula Group, LLC.

Dave Deptula is a battle-tested defense innovator. A highly decorated military leader he transitioned from the Air Force in 2010 as a three-star General. He has twice been a Joint Task Force Commander; was the principal attack planner for the Desert Storm air campaign that changed the character of modern warfare; orchestrated air operations over Iraq in 1998/99, directed the air campaign over Afghanistan in 2001 during the period of decisive combat; and he ran air operations for the 2005 South Asia tsunami relief. He has piloted more than 3,000 flying hours—400 in combat—to include multiple command assignments in the F-15. He has also served on two congressional commissions charged with outlining America's future defense posture. In his last assignment as the Air Force's first Deputy Chief of Staff for intelligence, Surveillance, and Reconnaissance (ISR), he set the pace for the transformation of America's military ISR and remotely piloted aircraft enterprises, setting a standard emulated by services and nations around the world. Formerly a CEO of a high-technology company, he currently is a senior scholar at the US Air Force Academy; participates on a variety of public, private, and think-tank Boards; and is a thought leader on defense, strategy, and ISR.

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MILLICENT AND EUGENE BELL FOUNDATION

MR. ABE KAREM

Founder and President of Karem Aircraft

Mr. Abe Karem is the founder and president of Karem Aircraft, a pioneer in the field of aeronautics, member of the National Academy of Engineering, and recipient of the AHS Alexander Klemin award and ASME Spirit of St. Louis medal. Abe has a storied history of creating advanced aircraft development teams, both in the United States and in Israel. He has modeled his teams on those of the golden era of aviation development, 1930 –1960, when small vertically integrated operations used short project development cycles to rapidly build experience across multiple programs.

In the United States, Abe is perhaps best known for the achievements of Leading Systems, which led to the Predator UAS family. Leading Systems was founded with a goal of achieving major steps in aircraft system performance and cost effectiveness. On the DARPA/Navy Amber program, Leading Systems developed and proved the Amber unmanned aircraft system (UAS), demonstrating record-breaking reliability, utility, endurance, and effect. By 1989, Amber had been brought to a pre-production level, with some thirteen aircraft built. Leading Systems also developed the export-market Gnat 750 aircraft system. Shortly after the acquisition of Leading Systems by General Atomics, the basic Gnat 750 design was equipped with satellite communications and was named Predator. Across these programs, Leading Systems demonstrated a five-fold factor reduction in schedule and cost of aircraft development and production.

His next team, Frontier Systems, started in 1992, followed the same guiding principles. Teamed with Loral (Lockheed) and Boeing, Frontier Systems competed on the Tier II+ high-altitude, long-endurance unmanned aircraft program that led to the Global Hawk, and constructed and flew airframe and control demonstrator vehicles. In 1998, Frontier Systems was awarded a contract by DARPA to demonstrate its radical new high-stiffness variable speed rotor concept. By 2002, this rotor was flown in flight testing as partof a highly integrated 20+ hour endurance unmanned rotorcraft, the A160 Optimum Speed Rotor (OSR) Hummingbird. This development and testing was achieved with remarkably low levels of funding, accomplished by leveraging the talent of the integrated design/build/operate team.

Karem Aircraft today brings together the experiences of these past teams, to provide advanced development of aerospace hardware at a small fraction of the cost of the traditional defense contractors while maintaining industry-standard quality and controls.

VIJAY KUMAR

UPS Foundation Professor in the School of Engineering and Applied Science at the University of Pennsylvania

Vijay Kumar is the UPS Foundation Professor in the School of Engineering and Applied Science at the University of Pennsylvania. He received his Bachelors of Technology from the Indian Institute of Technology, Kanpur and his Ph.D. from The Ohio State University in 1987. He has been on the Faculty in the Department of Mechanical Engineering and Applied Mechanics with a secondary appointment in the Department of Computer and Information Science at the University of Pennsylvania since 1987. He directed the GRASP Laboratory, a multidisciplinary robotics and perception laboratory, from 1998-2004. He was the Chairman

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of the Department of Mechanical Engineering and Applied Mechanics from 2005-2008. He then served as the Deputy Dean for Education in the School of Engineering and Applied Science from 2008-2012.

Dr. Kumar is a Fellow of the American Society of Mechanical Engineers (ASME) and the Institution of Electrical and Electronic Engineers (IEEE). His most recent rewards include the 2012 ASME Mechanisms and Robotics Award, the 2012 IEEE Robotics and Automation Society Distinguished Service Award and a 2012 World Technology Network Award. He is also a Distinguished Lecturer in the IEEE Robotics and Automation Society and an elected member of the Robotics and Automation Society Administrative Committee (2007-2012). His research interests are in robotics, specifically multi-robot systems, and micro aerial vehicles.

DR. PETER W. SINGER
Senior Fellow and Director of the 21st Century Defense Initiative at the Brookings Institution

Peter Warren Singer is Senior Fellow and Director of the 21st Century Defense Initiative at the Brookings Institution. He is the youngest scholar named Senior Fellow in Brookings's 95-year history. He has been named by CNN to their "New Guard" List of the Next Generation of Newsmakers, by the Smithsonian Institution-National Portrait Gallery as one of the 100 "leading innovators inthe nation," by the Turner Broadcasting series "26 People to Save the World," and by Foreign Policy Magazine to their Top 100 Global Thinkers List, of the people whose ideas most influenced the world that year.

In his personal capacity, Singer served as coordinator of the Obama-08 campaign's defense policy task force, as a consultant for the US Department of Defense and FBI, and has advised a host of entertainment programs, including the video game series *Call of Duty* and *Metal Gear Solid*, movies like *Traitor*, *Whistleblower*, *Line of Sight*, and *Battleship*, and the TV series *The West Wing*, *24*, *Curiosity*, and *Strikeback*. He has received awards/support from the Tribeca Film Institute, Sloan Filmmakers Fund, Film Independent, and FAST Track at the L.A. Film Festival.

Dr. Singer is considered one of the world's leading experts on changes in 21st century warfare. He was named by the President to the US Military's Transformation Advisory Group. He is a columnist for Armed Forces Journal and has written for media outlets that range from the Newsweek to Weltpolitik. He has provided commentary on military affairs for nearly every major TV and radio outlet, including ABC-Nightline, Al Jazeera, BBC, CBS-60 Minutes, CNN, FOX, NPR, and the NBC Today Show.

Dr. Singer's most recent book, *Wired for War*, looks at the implications of robotics and other new technologies for war, politics, ethics, and law in the 21st century. Described as "awesome" by Jon Stewart of the *Daily Show*, *Wired for War* made the New York Times non-fiction bestseller list in its first week of release. It was named a non-fiction Book of the Year by *The Financial Times* and featured at venues as diverse as all three US military academies, the US Congress, The Festival of Dangerous Ideas, TED, and the royal court of the UAE. The book has also been made an official reading of the National Defense University, US Air Force, US Navy, and the Royal Australian Navy. His other previous books include *Corporate Warriors: The Rise of the Privatized Military Industry*, and *Children at War.*

Dr. Singer received his Ph.D. in Government from Harvard University and a B.A. from the Wilson School of Public and International Affairs at Princeton University.

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PETER YOST
Writer, producer, and director of *Rise of the Drones*

Peter Yost is the founder of the New York-based production company Pangloss Films. A multiple Emmy-nominated filmmaker, Yost specializes in creating films that challenge our assumptions about the world around us. He's directed dozens of films on a wide-range of topics for the world's leading broadcasters, including *Inside North Korea* (Emmy-nominated), *Solitary Confinement*, *Area 51: Declassified*, *The Science of Babies*, *The Color of Oil* (Emmy-nominated), *The Secret History of Gold*, *Inside Sumo* and *Seeds of Tibet*. Yost's independent films have won numerous festival awards and been funded by the Sundance Institute and others. Before *Rise of the Drones*, his most recent film, *Secrets of the Viking Sword*, was chosen to premiere NOVA's 2012 broadcast season. Yost is currently directing a 3-part PBS series, *The Quest to the Map of the World*. A graduate of Swarthmore College, Yost lives in Brooklyn, New York with his wife and two daughters.