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#### Plan: The appropriation of outer space by private entities in the United Arab Emirates is unjust.

#### Legalization of private appropriation opens the door to private investment in the industry – assurance of profit is key.

SW 20 “UAE Space Law Details Announced To Facilitate Space Sector Development” SpaceWatch [SpaceWatch.Global is a digital magazine and portal for those interested in space and the far-reaching impact that space developments have. While showcasing the technology that enables the industry to edge closer to the next frontier, SpaceWatch.Global also provides analysis, forecasts and insight into the geopolitical implications of space developments. ], February 2020 <https://spacewatch.global/2020/02/uae-space-law-details-announced-to-facilitate-space-sector-development/> SM

UAE Space Law Details Announced To Facilitate Space Sector Development

The UAE Space Agency announced the details of the new UAE Space Law issued by President His Highness Sheikh Khalifa bin Zayed Al Nahyan.

The announcement was made on 24 February 2020 during an introductory workshop for the UAE Space Law, organised by the UAE Space Agency and held in Abu Dhabi. Previously, the law was passed by the UAE Cabinet, headed by His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President, Prime Minister and Ruler of Dubai, in late 2019.

During the workshop, the Agency revealed the details of the first law of its kind in the Arab and Islamic world, which aims to create a legislative and regulatory environment for the national space sector in line with the other laws and regulations in the UAE.

The UAE Space Law consists of nine chapters and 54 articles that regulate space activities across the country and governs the Agency’s role in this regard.

It clarifies the mechanism for issuing space activity permits; registering space objects and vehicles; responsibility and insurance regulations for space activities; space accidents and risks regulations; the transitional period for current operators regulations; the provisions for regulating the construction of facilities on other planets, as well as the utilisation of space resources and developing space debris mitigation measures.

The new law aims to adhere to international treaties, and be clear, transparent, and flexible. It also aims to protect the UAE’s interests through establishing a balance between economic and commercial requirements, encourage innovation, adhere to the requirements of security, safety, and protect the environment, as well as drive investment and promote the participation of the private sector in the space industry.

The law is being implemented during a transformational time within the global space sector, as the transition to New Space continues to present new opportunities for start-ups and small to medium-sized businesses, including those recently incubated within the UAE in partnership with KryptoLabs and Mohammed bin Rashid Aerospace Hub, to enter the market and contribute to the sector’s growth and development.

The workshop was attended by Dr. Ahmed bin Abdulla Humaid Belhoul Al Falasi, Minister of State for Higher Education and Advanced Skills and Chairman of the UAE Space Agency; Simonetta Di Pippo, Director of the United Nations Office for Outer Space Affairs, UNOOSA; Dr. Mohammed Nasser Al Ahbabi, Director-General of the UAE Space Agency, as well as executives and experts in the space sector, relevant governmental and non-governmental bodies, and representatives of embassies for countries that have cooperative space projects and agreements with the UAE.

Dr. Ahmed Al Falasi said, “The new law regulates space activities to facilitate the development of a prosperous and safe space sector in the UAE, which realises our wise leadership’s vision for the sector. It also sets a clear framework for the rights and duties of officials and establishments operating in this sector and guarantees the rights of all relevant parties, in compliance with the international agreements and treaties signed by the UAE.”

“The new law reinforces the UAE’s leading position in the international space sector, where it now stands among a few nations that have such laws, particularly since it covers relatively new activities which are not yet addressed in other laws around the world, as well as other future activities which the UAE intends to develop the appropriate infrastructure for in the near future,” the Minister added.

“The law will be a key factor in opening the doors for investment in the national space sector to various global companies, due to its legislative and regulatory environment, which provides foreign investors with assurance ahead of starting their business and projects in the UAE,” Dr. Al Falasi added.

Commenting on the announcement, Al Ahbabi said, “The enactment of the new space law will provide the UAE with an integrated legislative system for the space sector, making it a reference for regional and international space projects. The law will contribute to keeping pace with the rapid growth of the space sector and regulating the work of its various stakeholders within one ecosystem that promotes the sector and its capabilities and ensures the optimal use of its resources.”

“The Agency developed the law within the framework of its field of expertise and strategic plans for developing the UAE’s space sector,” the UAE Space Agency Director-General explained, adding that the law will enable the sector to launch more space projects, initiatives, and missions, bolstering the UAE’s position among ambitious countries in the global space race.

“The Agency drafted the law in collaboration with top international experts as per the best practice, as well as its consulting committee that includes the brightest minds in the space sector, to ensure that the law meets the current and future trends for the sector,” he noted.

Commenting on the United Nation’s partnership with the UAE Space Agency, UNOOSA Director Di Pippo, said, “I would like to express my gratitude to the UAE’s contribution to the space sector, and as we look forward to expanding our work with the UAE in Space, we will soon be establishing a new office of the United Nations in the UAE, which will be dedicated to space exploration and will reinforce the UAE’s position as a global space hub.”

Nasser Al Rashidi, Director of Space Policy and Regulations at the UAE Space Agency, gave a presentation during the workshop clarifying the law and demonstrating stages of its implementation, as well as its most important elements.

Al Rashidi said, “The UAE Space Law comes in line with the UAE Vision 2021, the UAE Centennial 2071, the 4th Industrial Revolution Strategy, the Higher Policy for Science and Technology and Innovation, and the National Policy for the Space Sector. The development of this law took into consideration 20 relevant treaties and agreements, and compared its elements to more than 18 other national space laws of countries such as the US, Russia, France, Germany, Korea, Hong Kong, Brazil and Kazakhstan among others.

“The development of the law was also based on key local legislations relevant to space sector and its activities, such as the civil aviation law, the communications law, commercial companies’ law, IP rights laws, and imports and exports laws. The process also involved consultations with more than 15 relevant parties within the country and other agencies of leading states in the space sector.”

“The law,” Al Rashidi noted, “also tackles advanced, new, and modern concepts that are garnering international attention, including space-launch activities, organising manned trips, space tourism and related activities, training and science activities, high-altitude activities, building and using man-made facilities in space and on other planets, ownership and usage rights of space resources, and other commercial activities like mining operations and space logistics services, in addition to the mechanism for dealing with space debris, meteorites, and managing space risks.”

The global space industry is currently worth more than US$400 billion, including countless opportunities for businesses and governments.

As an emerging space nation, the UAE space industry’s investments have exceeded AED22 billion. The UAE Space sector has provided 1,500 jobs, at 57 space-related entities, five space research and development centres, and three universities offering space degrees. Moreover, the commercial space sector in the UAE includes the seventh largest satellite operator in the world in terms of revenue, Al Yah Satellite Communications Company, and Thuraya Telecommunications Company.

With its Space Investment Promotion Plan, the UAE Space Agency aims to make the UAE a regional hub for commercial space activities and advanced research and development, through increasing foreign investment in the UAE Space sector as well as encouraging local investors who may be considering funding opportunities within the space exploration and commercial space industries. In 2019, the UAE had six new space start-ups, where four of them were established by Emirati nationals.

#### The private sector is key to the next stage of UAE’s space advancement.

Sapra 21 “UAE sends out call for space startups” Bani Sapra is a Business Insider editorial fellow covering tech October 18, 2021 <https://wired.me/science/space/uae-sends-out-call-for-space-startups/> SM

AFTER PROVING ITSELF on a mission to Mars, the UAE’s Mohammed bin Rashid Space Center (MBRSC) now wants the private sector to contribute toward achieving its ambitious goals.

The space agency is launching Space Ventures, an initiative aimed at incubating space startups within the UAE. Those joining the new ecosystem will be able to work with MBRSC on long-term projects (such as its planned mission to explore the asteroid belt between Mars and Jupiter in 2028 and its eventual aim to establish human settlements on Mars in 2117). They will also receive support from MBRSC, allowing them to access new technologies and work with regulatory agencies around the world, according to the announcement.

“Space Ventures will help in establishing a strong and sustainable space ecosystem that will contribute to achieving the goals of the Mars 2117 Programme… as well as other space programs in the UAE,” says Adnan Al-Rais, the head of MBRSC’s Mars 2117 program. Given the many niche areas of specialization within the space sector (including communications, data storage, space hardware, robotics, and internet-of-things devices), Al-Rais predicts that an ecosystem of diverse startups will allow both MBRSC and the startups to collaborate and innovate together.

The new initiative comes at a moment when the private sector is going through something of a space renaissance. SpaceX, Blue Origin, and Virgin Galactic each sent up civilian astronauts this year (billionaires included), and have committed to making space tourism a more accessible dream, spurring enthusiasm in the sector. The renewed global drive to explore space could help propel Space Ventures, which says that it is looking to attract startups from around the world (provided they are willing to relocate to the UAE).

Since sending its first astronaut, Hazza Al-Mansouri, to the International Space Station in September 2019, the UAE has hit a series of milestones in its space ambitions. The Hope probe, which entered Mars’ orbit in February, has sent back hundreds of images and gigabytes of scientific data that can help researchers gain a better understanding of the Red Planet. Two Emirati astronauts have meanwhile been sent to Moscow to join an international team preparing to live in a space simulation for the next eight months (only one of the Emirati astronauts join the crew living in the isolation, while the other will serve as a reserve). As the country now plans its next mission—which will entail orbiting around Venus, as well as becoming the first Arab country to land a probe on an asteroid—MBRSC chief Yousuf Al-Shaibani says that the private sector will be now be critical to furthering its ambitions.

“The UAE space sector is looking to further expand its horizon and create a new space economy landscape in the country through a self-sustaining space ecosystem,” says Al-Shaibani. “This is only possible through partnerships with ambitious companies focused on emerging trends in the upstream and downstream areas of the space sector as well as space exploration and sciences, which will add further impetus to the country’s space sector.”

#### The UAE is the sole leader of the Middle East space mining race now but cascades are possible – legalization of appropriation is key.

Al Shamsi 17 “#SWMEThemes: Could Earth’s Asteroids Be the Next Al Ghawar Oil Field?” Humaid Al Shamsi is a founding Partner of ABH Aerospace and a Member of the Advisory Council of For All Moonkind, Inc. July 2017 <https://spacewatch.global/2017/07/swmethemes-earths-asteroids-next-al-ghawar-oil-field/> SM

Currently, the United Arab Emirates is the only Gulf country that has announced its plans for space mining. The emerging space nation has made space activity one of its strategic goals as it endeavors to diversify and shift its economy from being oil-based. The UAE, which established its space agency in 2014, is very active in space exploration and will launch a probe to Mars by 2020. It also wants to build a colony on the Red Planet by 2117. Thus, mining asteroids might be a small step towards reaching that ultimate goal since it would provide the necessary resources, including water and Helium-3, to support human life in outer space.

Meanwhile, the UAE is in the process of developing a space law that would promote commercial activities in space. Significantly, such a law would grant ownership rights to the private sector over the natural resources they extract. However, the UAE is not alone in adopting this approach. The United States was the first to issue this kind of law and Luxembourg is going in the same direction.

The importance of passing new space laws cannot be overemphasized. Due to its extensive experience in oil production along with international collaboration with other space nations and the private sector, the UAE, which holds the seventh largest proven oil reserve, is in a position to be a global leader in the development of commercial space activities. Although the feasibility of exploiting off-Earth resources appears to be out of the picture for the time being, due to the lack of adequate technology, setting out the foundation and the legal framework for this potential development is necessary. On the other hand, the rest of the Gulf states have not yet shown similar interest. Nonetheless, they may follow and enter the race once mining in space has become feasible.

Of highest concern to members of the private sector is the right to ownership over the resources they extract from space. The foundational document of international space law is the Outer Space Treaty (OST), signed in 1967, which lays down the principles of using and exploring outer space. It promotes the principle of freedom of use and exploration of outer space for all states without discrimination. Yet, Article II of the OST restricts this right by prohibiting any national appropriation of materials from outer space. The non-appropriation principle is controversial; the question is whether it should include exploitation of natural resources from celestial bodies such as asteroids or the Moon.

Currently, the interpretation that prohibits any exploitation of off-Earth resources is more accepted by legal scholars, regardless of whether such resources are exploited by a government entity or member of the private sector, since a state remains responsible for its private sector activities in space. However, the emerging practice by states to adopt national laws that grant ownership rights to the private sector over resources they exploit from outer space would arguably create a new customary international rule if other states follow the same practice consistently, this practice has been accepted as law by states and is known as opinio juris. Since amending the OST would be extremely challenging, a possible solution could be establishing a soft law that promotes space mining whether through a UN resolution or international guidelines.

To conclude, while Earth’s natural resources are being exhausted and may not satisfy the rapid increase in demand for resources, natural resources in our solar system could ensure humanity’s development and meet its demand for energy and other resources. The Gulf states which have provided the world with energy for the last several decades should consider space as a future opportunity. Only the UAE, however, seems interested in such development based on its experience in oil production and its plans to diversify its economy. The UAE aims to promote commercial space activities including space mining and to establish a legal framework that protects and guarantees the private sector’s rights. However, current international space law could be an obstacle to this new industry since it does not support ownership rights over off-Earth resources. Perhaps states’ practices along with opinio juris will establish a new customary international law. Alternatively, adopting a soft law that promotes space mining and protects private sector rights will certainly encourage the exploitation of outer space resources.

#### Acceleration of UAE space appropriation and dominance solidifies UAE regional leadership and sets off Middle East space racing.

Al-Saif 20 “The United Arab Emirates plans a space mission to Mars this week, bolstering the country’s regional power status.” July 13, 2020 Bader Mousa Al-Saif is a nonresident fellow at the Malcolm H. Kerr Carnegie Middle East Center in Beirut, where his research focuses on the Gulf and Arabian Peninsula. <https://carnegie-mec.org/diwan/82282> SM

Space is rapidly becoming a new domain for Middle Eastern states to project their power and vie for leadership in the region. The United Arab Emirates (UAE) is a case in point, with a mission to Mars to be launched this week. A national countdown to July 17\* is meant to excite Emiratis and Arabs in general, for it marks the first time an Arab state launches a mission into outer space.

The Emirati government has named its Mars Mission Hope Probe, coloring it with a pan-Arab sentiment. The mission invokes past Arab Islamic achievements in the sciences and incites Arabs to maintain that spirit. There is no shortage of nationalist fervor, either. The UAE has timed the completion of its mission before the 50th anniversary of the federation’s founding in December 2021. It has also tied it to its 100-year goal of establishing a human colony on Mars by 2117.

The UAE has been marketing this science-driven apolitical Arab narrative of hope, but its space policy is more than that. It aims to reinforce its newfound regional power status and align the Middle East’s geopolitical order to its advantage. It has also, by default, ushered in a regional space race, something relatively novel in the Middle East. The UAE’s ability to complete its Mars Mission, and how this factors into its activist foreign policy, will determine the degree to which the UAE transforms itself and the region in the process.

The UAE prides itself on being the “first, biggest, and best.” But it cannot claim that in relation to space. Israel was the first state in the region to begin a space program in 1983. Israel benefited from U.S. expertise and was able to launch a reconnaissance satellite in 1988. The Israelis also tried, but failed, to land on the moon in 2019.

Though the Israeli space program is the oldest in the region, it has not been a priority for Israel. That is not the case with Dubai, which founded the Mohammed bin Rashid Space Center in 2006. The center was expanded by the federal government in 2014 with the creation of the UAE Space Agency. Knowing that it does not have the expertise, the UAE partnered with three U.S. academic institutions to jointly design and build its mission to Mars. The Emiratis assembled a team to support their effort, with an average age of below 35, a third of whom are women, headed by a young female minister tasked with advancing science. These steps reflected the UAE’s branding of itself as a champion of youth and women, while marketing this enterprise as an international collaboration that included manufacturing in the United States and a launch from Japan.

Other than Israel, Iran has also been active regionally in space. Its international collaboration has not been as intense as the UAE’s. Yet Iran has been producing satellites since establishing the Iran Space Agency in 2004, making it the second space state in the region. It has also sent animals into space, and launched a military satellite last April. Tehran’s early collaboration with Russia and China paid off with its first locally built satellite in 2009, which it named Omid, or Hope, the same name the Emiratis chose for their Mars mission.

The UAE is not the first Arab state to show an interest in space. Saudi Arabia led a pan-Arab effort in 1976 to establish the satellite operator Arabsat. The Saudis also produced the first Arab astronaut, Prince Sultan bin Salman. His participation in a mission of the space shuttle Discovery in 1985 was to be followed by a Saudi space policy, but this was put on hold after the crash of the Challenger.

By venturing into this domain, the UAE wants to position itself in a field long occupied by regional adversaries such as Israel and Iran. Emirati thinking is focused on differentiating the UAE from others and advancing its own agenda despite challenges. The UAE has much to gain if its mission to Mars succeeds—a feat only accomplished by the United States, the former Soviet Union, India, and the European Space Agency. Space is the Emiratis’ next convenient card to raise their country’s standing. Doing this would allow the UAE to bolster its post-2011 rise as a middle power in a region whose traditional centers—Egypt, Iraq, and Syria—have waned. This would grant the UAE an increasing say on thorny regional issues, such as peace with Israel, a nuclear deal with Iran, the Yemen conflict, and the dispute within the Gulf Cooperation Council.

The UAE’s actions in space have not gone unnoticed in the region. Saudi Arabia and Turkey created space agencies days apart in December 2018. Egypt joined the club soon thereafter in August 2019. Not wanting to allow this moment of regional attention to space to go to waste, the UAE established the first pan-Arab Space Coordination Group in 2019. It brought together eleven Arab states whose first goal is to develop “813,” a satellite to monitor earth named after the year in which the famed Arab House of Knowledge reached its peak upon Al-Ma’mun’s ascension to the caliphate. However, paying homage to Arab history did not mean the UAE would avoid standing out. It left for itself the more high-profile feat of a Mars exploration mission, while leaving the less ambitious goal of building a satellite to the Arab conglomerate.

Arabs and their neighbors have historically set their sights on the sea and land for sustenance. Now, space offers a new arena for potential development, competition, and conflict. For the UAE, its ability to shape regional geopolitics to its advantage is filled with hazards, especially with its risky foreign interventions. If successful, its space program can offset some of these risks and provide a chance for a UAE-centric worldview to prevail in an ever-changing Middle East.

#### Middle East space race spills over into missile arms racing because of dual-use technology.

El-Zobaidi 21 “The Middle East edition of ‘Star Wars’ takes shape” Dr Haitham El-Zobaidi is the executive editor of Al Arab Group. February 24, 2021 <https://thearabweekly.com/middle-east-edition-star-wars-takes-shape> SM

The Middle East edition of ‘Star Wars’ takes shape

Countries of the region are scrambling to position themselves geopolitically on the global level through the space race.

LONDON--The Middle East is readying to enter at a reduced scale its space version of the Cold War, with successive announcements of space projects and missile development programmes. The Emirati space probe orbiting Mars and reconnaissance drones endlessly whizzing over the region’s skies are but the latest manifestations of this new regional landscape.

A few days after the entry of the Emirati Al-Amal (Hope) probe into orbit over the Red Planet, followed by the US Perseverance rover mission and China’s Tianwen-1 spacecraft, Turkish President Recep Tayyip Erdogan was quick to announce his country’s plans to send an unmanned spacecraft to the moon by 2023.

On Tuesday, the head of the Turkish Space Agency talked about training 10,000 space scientists within a decade so as to turn Turkey into an advanced country in the field space sciences.

The Iranians say that their missile projects are already at advanced stages. They have announced more than once the sending into space of experimental satellites as well as a spacecraft manned by a laboratory animal, in an implicit response to earlier Israeli space projects which changed from space exploration projects to plans for long-range missile defence systems to counter any possible Iranian attacks.

The space race in the Middle East reenacts, albeit at a smaller scale, the race that began in the fifties of the last century between the United States and the Soviet Union and then turned in the eighties into what was to become known as “Star Wars.”

All the parties concerned want to be part of this space race, through which they want to secure important geopolitical positions on Earth.

All space technology achievements largely reflect on the weapons systems deployed over the region’s battlefields today, especially ballistic missiles, cruise missiles and drones.

The years 2019 and 2020 were two pivotal years in the region as more countries felt the urge to quickly enter the race.

A turning point was probably the targeted attack, launched by the Houthis but with Iranians not very far behind, against the facilities of Abqaiq, Saudi Arabia, where they managed to score a hit at one of the most vital installations of the world using cruise missiles and drones.

It was not long before the Turkish drones, which were delivered to Libya, were able to turn the balance of war in favour of the Government of National Accord (GNA) as these drones cut off the logistical supply lines of the attacking Libyan National Army (LNA) led by Field Marshal Khalifa Haftar. Then, they managed to destroy a large number of the LNA’s vehicles, forcing the Haftar-led army to withdraw from the vicinity of the capital and retreat to a defensive position in Sirte.

The Turks subsequently settled the battles of Nagorny Karabakh in favour of their allies with relative ease by targeting Armenian defences and personnel, destroying entire tank regiments and armoured battalions.

Experts say that mastery of space technology is the key to dominating the skies in the region’s future battles.

This trend is based on the dual use of these technologies as a repeat of what happened during the Cold War, when satellite technologies intended for communication and television broadcasting were a welcome offshoot of espionage technology advances and satellites being put on orbit.

But the most important dimension in this race is human investment, a dimension described by the head of the Turkish Space Agency, Serdar Huseyin Yildirim, as the decisive element “in achieving the goals of the national space programme.”

Concerned countries seek to dedicate great human and material assets to the training of new generations of scientists and engineers who can contribute to the development of space programmes. This is the case of the UAE, which has announced a plan to establish a university for space sciences.

Perhaps the other pertinent aspect of the space race in the region is the mastery of technologies capable of countering missile and drone attacks.

Space detection and guidance technology provides a dual opportunity to develop systems for monitoring, tracking and destroying cruise missiles and small drones.

States interested in such systems and weapons have declared their intent to develop anti-missile missiles capable of hitting slow-moving targets or targets flying at low altitudes to avoid radar detection and sophisticated defences such as the Patriot missile system.

Halkin, a regional company specialising in the production and supply of precision-guided missiles, unveiled on Tuesday at the IDEX defence exhibition being held in Abu Dhabi the Sky Knight system, the first anti-missile system against artillery and mortar shells that is designed and manufactured in the UAE.

A tour of the IDEX exhibition reveals the growing importance of drones in modern warfare. Their prototypes occupy large areas of exhibition grounds as the difference between space and traditional warfare technologies rapidly fades away.

Iran is expanding its missile capabilities with expanding sizes, ranges and types. It recently conducted exercises in which it paraded its various missile systems and offensive drones. Its leaders make no secret of their intent to make the whole Middle East region vulnerable to their retaliatory attacks if Israel strikes at their nuclear or missile projects.

For its part, Israel is promoting the “Iron Dome” counter-technology that it developed after the 2006 war with Hezbollah in Lebanon, and has since improved its performance in repelling Katyusha rockets fired from Gaza.

The United States, in turn, announced that it is working with the Israelis to develop defence systems that are derived from the “Iron Dome” model and that it wants to expand the scope of research in this regard. This project comes after the Americans realised the danger constituted by drones in infiltrating and evading defence systems intended to counter ballistic missiles flying at high altitudes.

#### Missile arms race escalates – draws in great powers.

Saab 18 “The coming Middle East missile arms race” Bilal Y. Saab [senior fellow and director of the Defense and Security Program at the Middle East Institute, and an adjunct assistant professor at Georgetown University’s Security Studies Program.], September 25, 2018 <https://thebulletin.org/2018/09/the-coming-middle-east-missile-arms-race/> SM

The coming Middle East missile arms race

When pundits speak of a post-American Middle East, they are often referring to American fatigue in the region, coupled with Russia’s resurgence following its successful intervention and subsequent military expansion in Syria.

But the bigger story of the geopolitical transition underway in the Middle East is the rise of local powers, and how they increasingly operate outside the US strategic orbit due to their decreasing confidence in US leadership.

Saudi Arabia’s war in Yemen is one example. Traditionally a US partner, Riyadh has taken matters into its own hands, leading an intervention in Yemen’s civil war, because of its doubts about Washington’s involvement in the region.

But beyond Yemen, there is a broader trend of independent policy-making and action on the part of presumed US partners that underscores how the region has gradually moved away from America’s control. This trend is most evident in national defense strategy, and specifically the quest by some key US partners in the Middle East—for now, Israel, Saudi Arabia, and the United Arab Emirates—for greater offensive military capabilities in the form of longer-range and more precise ballistic missiles.

Last month, Israeli Defense Minister Avigdor Lieberman said in a statement that his country was investing in a beefed-up and more accurate rocket and missile force. “The project for setting up a precision rocket and missile system is underway. Part of it is already in production and part is in the final phases of research and development,” he said. “We are acquiring and developing precision fire systems that will allow … the Israel Defense Forces to cover within a few years every point in the region.”

This may not represent a major shift in Israeli defense doctrine, but it does suggest an important change in security planning, given the country’s habitual reliance on the air force, and sometimes the navy, for strike missions. If Israel’s leadership still believed strongly in America’s traditional security role in the region, it is unlikely to have moved so forcefully and rapidly in this direction.

Those who disagree with this conclusion might point to the fact that the IDF has planned to develop an offensive missile force for a few decades. Moreover, the move makes military sense regardless of US considerations. The Israeli Air Force has always carried most of the burden of national defense, so creating a more balanced defense posture might serve national security and save both lives and money. (Missiles are cheaper than fighter jets, and obviously eliminate the risk to pilots). At a time when Israel faces growing military threats that might force it to fight wars on multiple fronts—Syrian, Lebanese, Palestinian, and possibly Iranian—the IDF could certainly use greater operational flexibility and speed.

While that is all true, though, there is no question that America’s passivity in the Middle East in recent years accelerated this Israeli decision and turned it from idea into reality. Had Washington made tangible efforts to prevent Iran from establishing a long-term military presence in Syria, or had Israel had the slightest assurance that Washington would actively support the elimination of Iran’s military infrastructure in Syria, the IDF would probably have shelved the offensive missile option for some time.

Similar dynamics are occurring on the Arabian Peninsula. While America’s Gulf partners have not yet taken steps as bold and decisive as Israel’s, this is not for lack of desire. Conversations I have had with Gulf military leaders in recent years suggest a consensus view that attempts to deter Iran from further developing its missile capabilities have failed, and that they therefore need a more diversified force mix. Countries like Saudi Arabia and the United Arab Emirates were purchasing the best, US-made weapons on the planet and investing in the most sophisticated missile defenses, and yet they still felt they had no effective solution to Iran’s formidable and fast-developing offensive missile arsenal. Their conclusion was that they might have to fight fire with fire.

The main reason Riyadh and Abu Dhabi have yet to pursue ballistic missiles is that Washington has managed for years to convince them not to. The last thing the United States needs in the Middle East is an offensive missile race, which could quickly lead the antagonists into a deadly military confrontation that drags Washington and Moscow into war. Missiles are inherently destabilizing weapons because of their potential to quickly escalate conflicts. Their flight times can be very short, and new technologies are dramatically improving their accuracy and lethality.

As if that were not scary enough, the nuclear future of the Middle East is also increasingly uncertain, now that the United States has withdrawn from the Joint Comprehensive Plan of Action, the deal that limited Iran’s nuclear development in exchange for sanctions relief. At the same time, at least half a dozen regional powers including Saudi Arabia, the United Arab Emirates, Turkey, Egypt, Jordan, and Qatar see peaceful nuclear energy as a long-term solution to their fossil-fuel dependence. The growth of nuclear power generation in the region could exacerbate the risk of nuclear proliferation, as the same technologies and materials are required to develop both nuclear energy and nuclear weapons. Should Middle East civilian nuclear development become militarized, possession of fleets of offensive missiles—arguably the most effective delivery vehicle for nuclear warheads—could magnify the potential danger.

Like Israel, some Gulf countries are heading toward a stronger deterrent posture—through a broader mix of offensive technologies, including missiles—because missile defense on its own does not seem to be the answer to the Iranian missile problem. Furthermore, missile defense is expensive and comes with its own set of challenges. While the best missile defense system would be one that is regionally integrated, any hope of establishing such a system in the Gulf is now gone because of the ongoing feud Saudi Arabia, the Emirates, and Bahrain are having with Qatar.

#### Middle East war goes nuclear.

Silverstein 21 “Iran-Israel tensions: The threat of nuclear disaster looms large,” Richard Silverstein [writes the Tikun Olam blog, devoted to exposing the excesses of the Israeli national security state], 23 April 2021 <https://www.middleeasteye.net/opinion/iran-israel-tensions-threat-nuclear-war-looms-large> SM

Israel had a near-miss of potentially catastrophic proportions on Thursday. As it has done hundreds of times in the past decade, the Israeli air force attacked Iranian bases inside Syria. In response, Syrian forces fired anti-aircraft missiles of a rather primitive Soviet model, one of which overflew its target and landed some 30 kilometres from Israel’s Dimona nuclear reactor. Israel said recently that it was bolstering its defences around Dimona for just such an eventuality.

Although an Iranian general taunted Israel, implying that Iran had some responsibility for the attack, that doesn’t appear to be the case. But the missile landing inside Israel does show that if Iran wanted to attack Dimona, it has the capacity. And despite Israel’s best efforts, an Iranian missile could hit its target.

With that, one of the worst nuclear disasters in the region’s history could unfold, including a Chernobyl-type radioactive leak that could endanger not only all of Israel, but also many of its neighbours.

A US general has assured a Senate committee that the Syrians weren’t intending to attack Israel. Rather, a misguided missile meant to target an Israeli warplane overshot its target. He blamed it on “incompetence”, as if that was supposed to be somehow reassuring; rather, it only reinforces how easy it is even for a mistake to cause a nuclear disaster.

Campaign of terror

Certainly, if either Israel or Iran wanted to bomb each other’s nuclear facilities, they could do so successfully. An Israeli attack would probably cause less catastrophic damage, but only because Iran’s nuclear programme is not nearly as developed as Israel’s. An Iranian direct hit on Dimona would cause incalculable damage due to the plutonium reactor at the facility.

Nor does this happen in a vacuum: Israel has maintained a decade-long campaign of terror attacks on Iranian military bases and nuclear scientists. Most recently, it bombed the Natanz nuclear facility, destroying the power generation source and damaging older-generation centrifuges. It also attacked an Iranian Revolutionary Guard spy ship off the Yemeni coast this month.

Iran has responded in its own limited way, restrained by its need to maintain good relations with nuclear-deal signatories.

For Israel, the attacks are a low-risk proposition. It defies US opposition (if there is any) with a wink and a nod, and the attacks look good on Prime Minister Benjamin Netanyahu’s résumé. To weather his corruption trial and retain public support, he needs external enemies (and internal enemies, but that’s a different story). Iran provides these in spades.

Eliminating Israeli leverage

The US could exert control over this scenario by eliminating Israeli leverage. If it agreed to lift sanctions in exchange for Iran’s return to low levels of uranium enrichment, as designated in the nuclear deal negotiated by the Obama administration, Israel’s rejectionist approach would become moot. The problem is that US President Joe Biden is running scared from Republican opposition to any nuclear deal with Iran. Besides, he has designated the Middle East a low priority for his administration.

There is some faint hope in the US announcement that it is ready to lift a partial set of sanctions. However, the list on offer is quite limited, and will certainly not satisfy the Iranians. Such half-measures present an example of the limitations of the Biden approach. He should instead make a full-throated commitment to end this dithering once and for all.

Israel is mounting a full-court press this coming week as it sends its Mossad and military intelligence chiefs, along with its army chief of staff, to Washington in an attempt to influence nuclear negotiations as they enter what may be a final stage. According to Haaretz, army chief of staff Aviv Kochavi “will also raise other issues, including Iran’s military expansion in Syria and the instability of Lebanon. Israel is concerned about the possibility that Hezbollah will try to … [foment] conflict with Israel.”

The hypocrisy of Israel’s refusal to acknowledge its own massive military interventions in Lebanon, Syria, Gaza and even Iraq, while decrying Iran’s involvement in Syria, is almost breathtaking.

There is next to no chance that any of this will enter into the considerations of negotiators in Vienna. Unlike Israel, they are interested in doing a nuclear deal, not engaging in wishful thinking.

Combustible Middle East mix

Returning to the Biden administration’s global goals, the Middle East doesn’t care about presidential priorities. It contains a combustible mix of corrupt elites and overbearing dictators who do not shirk from causing mayhem in their domains. And one of them, perhaps a desperate Israeli prime minister or an ageing ayatollah eager to preserve his honour and legacy, could inadvertently (or intentionally) set the entire region aflame.

If Biden doesn’t act quickly and decisively, there is a sizeable risk that another missile from one country or the other will hit a target and cause devastation. That would mark a point of no return, like the assassination of Archduke Franz Ferdinand in Sarajevo in 1914, which led to World War One. The difference is that in 1914, armies fought with guns, bayonets and artillery. Today, they will fight with F-35s, ballistic missiles and possibly nuclear weapons.

#### Nuke war causes extinction – Ice Age, famines, and war won’t stay limited

Edwards 17 [Paul N. Edwards, CISAC’s William J. Perry Fellow in International Security at Stanford’s Freeman Spogli Institute for International Studies. Being interviewed by EarthSky. How nuclear war would affect Earth’s climate. September 8, 2017. earthsky.org/human-world/how-nuclear-war-would-affect-earths-climate] Note, we are only reading parts of the interview that are directly from Paul Edwards -- MMG

In the nuclear conversation, what are we not talking about that we should be?

We are not talking enough about the climatic effects of nuclear war. The “nuclear winter” theory of the mid-1980s played a significant role in the arms reductions of that period. But with the collapse of the Soviet Union and the reduction of U.S. and Russian nuclear arsenals, this aspect of nuclear war has faded from view. That’s not good. In the mid-2000s, climate scientists such as Alan Robock (Rutgers) took another look at nuclear winter theory. This time around, they used much-improved and much more detailed climate models than those available 20 years earlier. They also tested the potential effects of smaller nuclear exchanges. The result: an exchange involving just 50 nuclear weapons — the kind of thing we might see in an India-Pakistan war, for example — could loft 5 billion kilograms of smoke, soot and dust high into the stratosphere. That’s enough to cool the entire planet by about 2 degrees Fahrenheit (1.25 degrees Celsius) — about where we were during the Little Ice Age of the 17th century. Growing seasons could be shortened enough to create really significant food shortages. So the climatic effects of even a relatively small nuclear war would be planet-wide. What about a larger-scale conflict? A U.S.-Russia war currently seems unlikely, but if it were to occur, hundreds or even thousands of nuclear weapons might be launched. The climatic consequences would be catastrophic: global average temperatures would drop as much as 12 degrees Fahrenheit (7 degrees Celsius) for up to several years — temperatures last seen during the great ice ages. Meanwhile, smoke and dust circulating in the stratosphere would darken the atmosphere enough to inhibit photosynthesis, causing disastrous crop failures, widespread famine and massive ecological disruption. The effect would be similar to that of the giant meteor believed to be responsible for the extinction of the dinosaurs. This time, we would be the dinosaurs. Many people are concerned about North Korea’s advancing missile capabilities. Is nuclear war likely in your opinion? At this writing, I think we are closer to a nuclear war than we have been since the early 1960s. In the North Korea case, both Kim Jong-un and President Trump are bullies inclined to escalate confrontations. President Trump lacks impulse control, and there are precious few checks on his ability to initiate a nuclear strike. We have to hope that our generals, both inside and outside the White House, can rein him in. North Korea would most certainly “lose” a nuclear war with the United States. But many millions would die, including hundreds of thousands of Americans currently living in South Korea and Japan (probable North Korean targets). Such vast damage would be wrought in Korea, Japan and Pacific island territories (such as Guam) that any “victory” wouldn’t deserve the name. Not only would that region be left with horrible suffering amongst the survivors; it would also immediately face famine and rampant disease. Radioactive fallout from such a war would spread around the world, including to the U.S. It has been more than 70 years since the last time a nuclear bomb was used in warfare. What would be the effects on the environment and on human health today? To my knowledge, most of the changes in nuclear weapons technology since the 1950s have focused on making them smaller and lighter, and making delivery systems more accurate, rather than on changing their effects on the environment or on human health. So-called “battlefield” weapons with lower explosive yields are part of some arsenals now — but it’s quite unlikely that any exchange between two nuclear powers would stay limited to these smaller, less destructive bombs.

#### Even abstract concepts like tailoring a stabilizing UAE space program provides a template for studying human interactions and negotiating self-interest – even if it doesn’t solve conflict, studying IR helps break down the impulse for rightness vs. transgression dichotomies which characterized both interpersonal hostility and global war

Earle 86 [Professor of Psychology, The Ohio State University. International Relations and the Psychology of Control: Alternative Control Strategies and Their Consequences. Political Psychology, Vol. 7, No. 2 (Jun.,1986), pp. 369-375. https://www.jstor.org/stable/pdf/3791131.pdf]

Research into the psychology of control has revealed that control needs are key elements of individual psychological functioning. This paper argues that a “need for control’’ framework is also useful for understanding actions and ideologies at the national and international levels. It critically analyzes prevalent strategies for exerting control in this domain and proposes alternative strategies which permit greater fulfillment of control needs. These alternatives emerge from an examination of potential similarities between satisfaction of control needs within the separate but parallel domains of international relations and interpersonal relations.

Political psychology has the potential to translate issues of international relations into the terms of human interpersonal encounter. In my view, such a translation enhances our ability to think creatively about the current world situation.

The students in my freshman psychology course recently surprised me by adopting this approach for an in-class assignment. I had asked them to role-play a negotiating session between the United States and the Soviet Union on the issue of arms control. My assumption had been that they would act out the roles of political leaders on both sides, and would proceed by exchanging official positions on arms control issues. Instead, they took the viewpoint of ordinary Ameri-can and Soviet citizens and exchanged candid remarks concerning their feelings about the nuclear danger.

Their tone of earnest sincerity was in stark contrast to the kind of elaborate posturing, deceitfulness, and strategic “positioning” that usually characterizes this kind of endeavor at the diplomatic level. Having translated the arms race into its smallest constituent parts—the feelings of individual Soviet and American citizens—they had stripped away the layers of pretense and revealed the rigidly arbitrary nature of their country’s “party line.” After the role-play had ended, the students pressed me to admit that, if the political and military leaders on both sides were removed from the picture, much of the current conflict between the two countries could be settled by a consensus of common citizens from both sides.

It only occurred to me later that, regardless of the practicality of their solution, my class had arrived at it by a highly unusual means: They had asserted that the problems were amenable to human control by acknowledging their own individual human reactions to the dangers of continued international confrontation. I choose to focus here not on the solution my students proposed but on the impulse behind their proposal. The need expressed by these students to render these issues “controllable” in some fashion is a basic one. Perhaps an examination of this need, and the more vs. less healthy ways it can be satisfied, holds the key to a novel approach to international relations.

The concept of a “need for control” has recently received much attention within the field of psychology. The belief that one can exercise control over one’s outcomes is said to be critical to psychological well-being (Glass and Singer, 1972; Langer, 1983; Seligman, 1975; Wortman and Brehm, 1975). Research has shown that the negative consequences of a stressful event on physical and mental health can be overcome by a sense of control—i.e., a belief in one’s ability to cope with (respond effectively to) the event (Anderson, 1982; Langer and Rodin, 1976; Perlmuter and Monty, 1979; Weiss, 1972). The accumulating body of research in this area has promising applications for the restoration and maintenance of psychological health in a wide range of human environmental settings.

To date, feelings of control have been studied as an attribute of individual psychological functioning. However, the recent work of Fred Rothbaum and John Weisz and their colleagues (Rothbaum et al., 1982; Weisz et al., 1984) suggests that a “need for control” analysis may also be useful for understanding the functioning of individual nations within the international arena. Rothbaum et al. distinguish between primary and secondary forms of control. Primary control is the ability to enhance one’s rewards by doing something to influence existing realities (e.g., other people, circumstances). In secondary control, rewards are obtained by accommodating to existing realities and maximizing satisfaction with things as they are.

In other words, people attempt to gain control not only by bringing the environment into line with their wishes (primary control) but also by bringing themselves into line with environmental forces (secondary control). Weisz et al. argue that cultures differ in the extent to which they emphasize primary vs. secondary forms of control. They conclude that the proper relation between the two forms of control involves a dynamic interplay between them, and warn that too heavy an emphasis on either primary or secondary control may be maladaptive for cultures as well as individuals.

Extending the logic of Weisz et al. to the realm of international relations, it can be assumed that citizens and policymakers alike define the requirements of national self-interest in somewhat the same terms they use to evaluate their own individual sense of well-being. For example, there is widespread agreement that a key element of a “healthy” American psyche is a sense of national potency (“primary control,” in our terms) in the international arena. Ronald Reagan’s Presidency has been lauded by both supporters and detractors for its “restoration” of this sense of control after the “humiliating” decade of the 1970s—a legacy of Vietnam, the oil embargo, and the Iranian hostage crisis (cf. Yankelovich, 1982). Whether or not such a felt sense of control (or lack of same) would be sustained by an objective appraisal, it is nonetheless real if it has real consequences for domestic political priorities and foreign policy actions.

Given the present context of international relations, is an enhanced sense of control by one nation purchased at the expense of diminished control by other nations? [The Weisz et al. analysis does not attempt to address this key issue.] Under what conditions can this zero-sum notion of control be overcome? If the attainment of a sense of control is indeed an important objective within the world community, then these questions are critical.

The answer may lie in exploring alternative strategies for attaining primary control. For example, the prevailing strategy requires nations to maximize their power vis a vis potential adversaries. Yet the sense of control thus attained is always tenuous, because (a) the technological basis for maintaining such relative power may be eclipsed by breakthroughs on the other side, (b) such technology is subject to dissemination to third parties, thus diluting the power of its former owners, and (c) power that involves the domination of one nation by another (either directly or through surrogates) is bound to be resisted by those subject peoples whose own needs for control have been thwarted. Numerous examples attest to the existence of these needs (under the guise of “nationalism” and “self-determination” or “revolution” and “rebellion”—depending on the orientation of the describer) as a continued source of frustration for the great powers in their attempts to maintain the stability of client states.

Faced with these difficulties of asserting primary control, both the United States and the Soviet Union have come to rely heavily on a form of secondary control that Weisz et al. refer to as interpretive control. This is the attempt to interpret events so as to derive a sense of meaning and purpose from them. In the current great power struggle, this assumes the form of rigidly ideological beliefs about the nature of the “other side’’ and the necessity of continued struggle. It allows individual persons and actions to be subsumed under a “grand scheme” of impersonal global forces (e.g., “good” vs. “evil”). The interpretive route to control works to the extent that it provides a reassuring sense of order and predictability. However, this unifying vision is purchased at the expense of an empirically based analysis of what the rest of the world is doing and why. Reality is distorted to fit the dichotomy of rightness (on one’s own behalf) vs. transgression.

The selective “management” of information about foreign policy successes vs. failures is essential to this enterprise [the U.S. invasion of Grenada provides a recent example; see e.g., Middleton (1984) and Nelson (1983)]. Unfortunately, such selective information-gathering seriously impairs foreign policy. Numerous authors have described occasions on which great powers have become the captives of their own over-simplified world views (e.g., Didion, 1983; Tuchman, 1984; Sick, 1985).

Extended use of this secondary control strategy requires a blurring of the distinction between international politics and fiction. The Soviet Union does not enjoy a monopoly in this regard. Within the last year, the Vietnam War veteran has been resurrected as an American hero, and American audiences have eagerly imbibed his cinematic revenge against the North Vietnamese in “Rambo,” “Missing in Action,” and their television counterparts.

A related phenomenon is the president’s identification with the on-screen personas of fellow actors Clint Eastwood and Sylvester Stallone, whose adherence to simplified credos belie the gnawing complexities of value choices in the real world. Such reactions are likely not unique to Americans or to their current president. Instead, they are symptomatic of the frustrations incurred by nations who have failed in their attempts to exert active control over world events.

The control needs themselves are legitimate; the strategies that are currently employed for satisfying those needs are not. Use of such measures guarantees that the cycle will repeat itself—i.e., that unrealistic thinking and erroneous judgment will serve as the basis for future foreign policy actions.

The question remains: If the nations of the world cannot afford continued reliance on such an ineffective (and unbalanced) “mix” of control strategies, what are the alternatives? As suggested above, the answer lies in exploring alternative conceptions of “control.” Rather than conceiving of control as a subject-object relationship, in which the “object” is a fixed quantity (of land, resources, subject populations) to be apportioned among contending powers, one could instead consider it in the context of a subject-subject relationship, a dy-namic system in which control needs are realized by the exercise of mutual influence.

An analogy between the realms of international relations and interpersonal relations may serve to illustrate this distinction. In a personal relationship that is subject-object-based, each party has a mutually exclusive sphere of self-interest (“turf”) to be protected; the relationship must be negotiated on the basis of how much turf each party will cede to the other in exchange for similar consideration. A failure of negotiation may lead to unilateral attempts by either/both parties to grab some of the other’s turf. “Compromise” and “confrontation” thus define the parameters of this type of relationship.

Alternatively, a personal relationship may be subject-subject-based, to the extent that the relationship is not primarily directed toward the issue of sharing vs. hoarding (of a separate domain of self-interest) but rather toward a redefinition of self and self-interest in terms of the relationship. Satisfaction in such a relationship is not derived from the amount of turf seized from, or conceded by, the other party. Instead it obtains from the opportunity to exert positive influence over the other’s outcomes, and in turn to be the beneficiary of the other’s positive consideration and favorable regard (cf. Kelley, 1979; Kelley and Thi-baut, 1978).

#### This is exemplified by the security dilemma, the crux of our arms racing advantage, which is born out of the inevitable uncertainty in all human relations

Booth and Wheeler 8 [Ken Booth FBA is a British international relations theorist, and the former E H Carr Professor of the Department of International Politics at Aberystwyth University. Nicholas J. Wheeler is professor of international politics at the University of Birmingham and co-editor of the Cambridge Studies in International Relations book series, published by Cambridge University Press and the British International Studies Association. Rethinking the Security Dilemma. 2008. https://pdfs.semanticscholar.org/0505/37a6a9815cee8576c05fd83d13e77dcba32c.pdf]

The term ‘security dilemma’ describes a familiar predicament experienced by decision-makers in a world already overflowing with dilemmas. Despite its ubiquity, our claim is that the concept has been invariably misconceived by academic theorists, yet - properly understood - it should be regarded as the most fundamental concept of all in security studies, and as such should be at the centre of a reformed agenda of this field.1 The security dilemma is a foundational concept because, above all, it engages with the existential condition of uncertainty that characterizes all human relations, not least those interactions on the biggest and most violent stage of all - international politics. That its significance has not been properly recognized has been the result of orthodox thinking failing to give due credit to the work and insights of its major early theorists (John H. Herz and Herbert Butterfield, and later Robert Jervis) and at the same time missing the opportunity (as a result of paradigm blinkers) to appreciate the extent of the theoretical and practical horizons it opens up. Our claim is that an understanding of the dynamics and potentialities involved in thinking about the security dilemma gets to the heart of the central questions of security studies more profoundly than do even the traditional canon of concepts such as ‘war’, ‘strategy’, ‘conflict’ and the rest.

The house of uncertainty

By describing uncertainty as the ‘existential’ condition of human relations we mean that it is not an occasional and passing phenomenon, but rather an everyday part of the existence of individuals and groups. It is uneven in its significance and how it is felt, but it is ultimately inescapable. Insecurity, however, cannot be simply correlated with uncertainty, since uncertainty is a house in which there are many rooms, and in some life is much less insecure than in others. It is preferable to live with the uncertainties of what Kenneth Boulding (1979) called ‘stable peace’ than with the insecurities of Stanley Hoffmann’s (1965) condition of‘state of war’. When states practise cooperation, or societies even embed trust in security communities, significant degrees of security are attained, even within the house of uncertainty.

In the context of International Relations, the existential condition of uncertainty means that governments (their decision-makers, military planners, foreign policy analysts) can never be 100 per cent certain about the current and future motives and intentions of those able to harm them in a military sense. We call this situation one of unresolvable uncertainty, and see it as the core of the predicaments that make up the security dilemma.

The drivers of unresolvable uncertainty are multiple, but they can be reduced to the combination of material and psychological phenomena, and primarily the ambiguous symbolism of weapons and the psychological dynamic philosophers call the other minds problem. Together, these create the conditions for the concept first theorized by Herz (1951) and Butterfield (1951). Students of disarmament are familiar with the strategic meaning of the idea of the ambiguous symbolism of weapons, if not this actual label. The term refers to the difficulty (many would say the impossibility) of safely distinguishing between ‘offensive’ and ‘defensive’ weapons. As the old adage has it, whether you regard a gun as defensive or offensive depends on whether or not you have your finger on the trigger. This subjective interpretation, in principle, is the same in international politics, though in practice it is more complex. If, for example, it is argued that it is possible to distinguish between what is clearly offensive (a sword) from what is clearly defensive (a shield) with respect to individual weapons, strategists are likely to reply, unanimously, that such distinctions are operationally meaningless when interpreted as a whole, because a shield can be a vital part of an offensive move when used in combination with a sword.

Such an understanding has informed Russian, Chinese and other strategic planners in their interpretation of various plans for US ballistic missile ‘shields’ over the years. In the early twenty-first century, the Administration of George W. Bush attempted to justify deploying missile defence systems with the argument that they would help protect the US homeland against limited missile attack from ‘rogue states’ in general, and crucially Iran and North Korea in particular. Washington’s critics (in potential target countries and elsewhere)claimed to the contrary that the shield of missile defence can potentially be used in combination with the sword of US offensive nuclear missiles in a disarming strike against their enemies at some point in the future. The domestic critics of such a deployment in the USA for this reason see the move as destabilizing. ‘What is not a weapon in the wrong hands?’ is the question delegates at the World Disarmament Conference asked themselves in the early 1930s.

The closely related second dimension of unresolvable uncertainty is the other minds problem. This refers to the inability of the decision-makers of one state ever to get fully into the minds of their counterparts in other states, and so fully understand their motives and intentions, hopes and fears, and emotions and feelings. Obviously, some degree of understanding, sympathy, and (even) empathy is usually possible, but when it comes to matters of national security, the degree of confidence required by national security planners has to be very high, since the cost of getting it wrong is never trivial. A serious misjudgement could result in a waste of money and loss of prestige through the pursuit of bad policies; ultimately, defeat in war and foreign occupation might be the outcome.

### FW

#### The introspective connection between pain and pleasure and phenomenal conceptions of intrinsic value and disvalue is irrefutable – everything else regresses – robust neuroscience proves.

Blum et al. 18 Kenneth Blum, 1Department of Psychiatry, Boonshoft School of Medicine, Dayton VA Medical Center, Wright State University, Dayton, OH, USA 2Department of Psychiatry, McKnight Brain Institute, University of Florida College of Medicine, Gainesville, FL, USA 3Department of Psychiatry and Behavioral Sciences, Keck Medicine University of Southern California, Los Angeles, CA, USA 4Division of Applied Clinical Research & Education, Dominion Diagnostics, LLC, North Kingstown, RI, USA 5Department of Precision Medicine, Geneus Health LLC, San Antonio, TX, USA 6Department of Addiction Research & Therapy, Nupathways Inc., Innsbrook, MO, USA 7Department of Clinical Neurology, Path Foundation, New York, NY, USA 8Division of Neuroscience-Based Addiction Therapy, The Shores Treatment & Recovery Center, Port Saint Lucie, FL, USA 9Institute of Psychology, Eötvös Loránd University, Budapest, Hungary 10Division of Addiction Research, Dominion Diagnostics, LLC. North Kingston, RI, USA 11Victory Nutrition International, Lederach, PA., USA 12National Human Genome Center at Howard University, Washington, DC., USA, Marjorie Gondré-Lewis, 12National Human Genome Center at Howard University, Washington, DC., USA 13Departments of Anatomy and Psychiatry, Howard University College of Medicine, Washington, DC US, Bruce Steinberg, 4Division of Applied Clinical Research & Education, Dominion Diagnostics, LLC, North Kingstown, RI, USA, Igor Elman, 15Department Psychiatry, Cooper University School of Medicine, Camden, NJ, USA, David Baron, 3Department of Psychiatry and Behavioral Sciences, Keck Medicine University of Southern California, Los Angeles, CA, USA, Edward J Modestino, 14Department of Psychology, Curry College, Milton, MA, USA, Rajendra D Badgaiyan, 15Department Psychiatry, Cooper University School of Medicine, Camden, NJ, USA, Mark S Gold 16Department of Psychiatry, Washington University, St. Louis, MO, USA, “Our evolved unique pleasure circuit makes humans different from apes: Reconsideration of data derived from animal studies”, U.S. Department of Veterans Affairs, 28 February 2018, accessed: 19 August 2020, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6446569/>, R.S.

**Pleasure** is not only one of the three primary reward functions but it also **defines reward.** As homeostasis explains the functions of only a limited number of rewards, the principal reason why particular stimuli, objects, events, situations, and activities are rewarding may be due to pleasure. This applies first of all to sex and to the primary homeostatic rewards of food and liquid and extends to money, taste, beauty, social encounters and nonmaterial, internally set, and intrinsic rewards. Pleasure, as the primary effect of rewards, drives the prime reward functions of learning, approach behavior, and decision making and provides the **basis for hedonic theories** of reward function. We are attracted by most rewards and exert intense efforts to obtain them, just because they are enjoyable [10].

Pleasure is a passive reaction that derives from the experience or prediction of reward and may lead to a long-lasting state of happiness. The word happiness is difficult to define. In fact, just obtaining physical pleasure may not be enough. One key to happiness involves a network of good friends. However, it is not obvious how the higher forms of satisfaction and pleasure are related to an ice cream cone, or to your team winning a sporting event. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure [14].

Pleasure as a hallmark of reward is sufficient for defining a reward, but it may not be necessary. A reward may generate positive learning and approach behavior simply because it contains substances that are essential for body function. When we are hungry, we may eat bad and unpleasant meals. A monkey who receives hundreds of small drops of water every morning in the laboratory is unlikely to feel a rush of pleasure every time it gets the 0.1 ml. Nevertheless, with these precautions in mind, we may define any stimulus, object, event, activity, or situation that has the potential to produce pleasure as a reward. In the context of reward deficiency or for disorders of addiction, homeostasis pursues pharmacological treatments: drugs to treat drug addiction, obesity, and other compulsive behaviors. The theory of allostasis suggests broader approaches - such as re-expanding the range of possible pleasures and providing opportunities to expend effort in their pursuit. [15]. It is noteworthy, the first animal studies eliciting approach behavior by electrical brain stimulation interpreted their findings as a discovery of the brain’s pleasure centers [16] which were later partly associated with midbrain dopamine neurons [17–19] despite the notorious difficulties of identifying emotions in animals.

Evolutionary theories of pleasure: The love connection BO:D

Charles Darwin and other biological scientists that have examined the biological evolution and its basic principles found various mechanisms that steer behavior and biological development. Besides their theory on natural selection, it was particularly the sexual selection process that gained significance in the latter context over the last century, especially when it comes to the question of what makes us “what we are,” i.e., human. However, the capacity to sexually select and evolve is not at all a human accomplishment alone or a sign of our uniqueness; yet, we humans, as it seems, are ingenious in fooling ourselves and others–when we are in love or desperately search for it.

It is well established that modern biological theory conjectures that **organisms are** the **result of evolutionary competition.** In fact, Richard Dawkins stresses gene survival and propagation as the basic mechanism of life [20]. Only genes that lead to the fittest phenotype will make it. It is noteworthy that the phenotype is selected based on behavior that maximizes gene propagation. To do so, the phenotype must survive and generate offspring, and be better at it than its competitors. Thus, the ultimate, distal function of rewards is to increase evolutionary fitness

by ensuring the survival of the organism and reproduction. It is agreed that learning, approach, economic decisions, and positive emotions are the proximal functions through which phenotypes obtain other necessary nutrients for survival, mating, and care for offspring.

Behavioral reward functions have evolved to help individuals to survive and propagate their genes. Apparently, people need to live well and long enough to reproduce. Most would agree that homo-sapiens do so by ingesting the substances that make their bodies function properly. For this reason, foods and drinks are rewards. Additional rewards, including those used for economic exchanges, ensure sufficient palatable food and drink supply. Mating and gene propagation is supported by powerful sexual attraction. Additional properties, like body form, augment the chance to mate and nourish and defend offspring and are therefore also rewards. Care for offspring until they can reproduce themselves helps gene propagation and is rewarding; otherwise, many believe mating is useless. According to David E Comings, as any small edge will ultimately result in evolutionary advantage [21], additional reward mechanisms like novelty seeking and exploration widen the spectrum of available rewards and thus enhance the chance for survival, reproduction, and ultimate gene propagation. These functions may help us to obtain the benefits of distant rewards that are determined by our own interests and not immediately available in the environment. Thus the distal reward function in gene propagation and evolutionary fitness defines the proximal reward functions that we see in everyday behavior. That is why foods, drinks, mates, and offspring are rewarding.

There have been theories linking pleasure as a required component of health benefits salutogenesis, (salugenesis). In essence, under these terms, pleasure is described as a state or feeling of happiness and satisfaction resulting from an experience that one enjoys. Regarding pleasure, it is a double-edged sword, on the one hand, it promotes positive feelings (like mindfulness) and even better cognition, possibly through the release of dopamine [22]. But on the other hand, pleasure simultaneously encourages addiction and other negative behaviors, i.e., motivational toxicity. It is a complex neurobiological phenomenon, relying on reward circuitry or limbic activity. It is important to realize that through the “Brain Reward Cascade” (BRC) endorphin and endogenous morphinergic mechanisms may play a role [23]. While natural rewards are essential for survival and appetitive motivation leading to beneficial biological behaviors like eating, sex, and reproduction, crucial social interactions seem to further facilitate the positive effects exerted by pleasurable experiences. Indeed, experimentation with addictive drugs is capable of directly acting on reward pathways and causing deterioration of these systems promoting hypodopaminergia [24]. Most would agree that pleasurable activities can stimulate personal growth and may help to induce healthy behavioral changes, including stress management [25]. The work of Esch and Stefano [26] concerning the link between compassion and love implicate the brain reward system, and pleasure induction suggests that social contact in general, i.e., love, attachment, and compassion, can be highly effective in stress reduction, survival, and overall health.

Understanding the role of neurotransmission and pleasurable states both positive and negative have been adequately studied over many decades [26–37], but comparative anatomical and neurobiological function between animals and homo sapiens appear to be required and seem to be in an infancy stage.

Finding happiness is different between apes and humans

As stated earlier in this expert opinion one key to happiness involves a network of good friends [38]. However, it is not entirely clear exactly how the higher forms of satisfaction and pleasure are related to a sugar rush, winning a sports event or even sky diving, all of which augment dopamine release at the reward brain site. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure.

Remarkably, there are pathways for ordinary liking and pleasure, which are limited in scope as described above in this commentary. However, there are **many brain regions**, often termed hot and cold spots, that significantly **modulate** (increase or decrease) our **pleasure or** even produce **the opposite** of pleasure— that is disgust and fear [39]. One specific region of the nucleus accumbens is organized like a computer keyboard, with particular stimulus triggers in rows— producing an increase and decrease of pleasure and disgust. Moreover, the cortex has unique roles in the cognitive evaluation of our feelings of pleasure [40]. Importantly, the interplay of these multiple triggers and the higher brain centers in the prefrontal cortex are very intricate and are just being uncovered.

Desire and reward centers

It is surprising that many different sources of pleasure activate the same circuits between the mesocorticolimbic regions (Figure 1). Reward and desire are two aspects pleasure induction and have a very widespread, large circuit. Some part of this circuit distinguishes between desire and dread. The so-called pleasure circuitry called “REWARD” involves a well-known dopamine pathway in the mesolimbic system that can influence both pleasure and motivation.

In simplest terms, the well-established mesolimbic system is a dopamine circuit for reward. It starts in the ventral tegmental area (VTA) of the midbrain and travels to the nucleus accumbens (Figure 2). It is the cornerstone target to all addictions. The VTA is encompassed with neurons using glutamate, GABA, and dopamine. The nucleus accumbens (NAc) is located within the ventral striatum and is divided into two sub-regions—the motor and limbic regions associated with its core and shell, respectively. The NAc has spiny neurons that receive dopamine from the VTA and glutamate (a dopamine driver) from the hippocampus, amygdala and medial prefrontal cortex. Subsequently, the NAc projects GABA signals to an area termed the ventral pallidum (VP). The region is a relay station in the limbic loop of the basal ganglia, critical for motivation, behavior, emotions and the “Feel Good” response. This defined system of the brain is involved in all addictions –substance, and non –substance related. In 1995, our laboratory coined the term “Reward Deficiency Syndrome” (RDS) to describe genetic and epigenetic induced hypodopaminergia in the “Brain Reward Cascade” that contribute to addiction and compulsive behaviors [3,6,41].

Furthermore, ordinary “liking” of something, or pure pleasure, is represented by small regions mainly in the limbic system (old reptilian part of the brain). These may be part of larger neural circuits. In Latin, hedus is the term for “sweet”; and in Greek, hodone is the term for “pleasure.” Thus, the word Hedonic is now referring to various subcomponents of pleasure: some associated with purely sensory and others with more complex emotions involving morals, aesthetics, and social interactions. The capacity to have pleasure is part of being healthy and may even extend life, especially if linked to optimism as a dopaminergic response [42].

Psychiatric illness often includes symptoms of an abnormal inability to experience pleasure, referred to as anhedonia. A negative feeling state is called dysphoria, which can consist of many emotions such as pain, depression, anxiety, fear, and disgust. Previously many scientists used animal research to uncover the complex mechanisms of pleasure, liking, motivation and even emotions like panic and fear, as discussed above [43]. However, as a significant amount of related research about the specific brain regions of pleasure/reward circuitry has been derived from invasive studies of animals, these cannot be directly compared with subjective states experienced by humans.

In an attempt to resolve the controversy regarding the causal contributions of mesolimbic dopamine systems to reward, we have previously evaluated the three-main competing explanatory categories: “liking,” “learning,” and “wanting” [3]. That is, dopamine may mediate (a) liking: the hedonic impact of reward, (b) learning: learned predictions about rewarding effects, or (c) wanting: the pursuit of rewards by attributing incentive salience to reward-related stimuli [44]. We have evaluated these hypotheses, especially as they relate to the RDS, and we find that the incentive salience or “wanting” hypothesis of dopaminergic functioning is supported by a majority of the scientific evidence. Various neuroimaging studies have shown that anticipated behaviors such as sex and gaming, delicious foods and drugs of abuse all affect brain regions associated with reward networks, and may not be unidirectional. Drugs of abuse enhance dopamine signaling which sensitizes mesolimbic brain mechanisms that apparently evolved explicitly to attribute incentive salience to various rewards [45].

Addictive substances are voluntarily self-administered, and they enhance (directly or indirectly) dopaminergic synaptic function in the NAc. This activation of the brain reward networks (producing the ecstatic “high” that users seek). Although these circuits were initially thought to encode a set point of hedonic tone, it is now being considered to be far more complicated in function, also encoding attention, reward expectancy, disconfirmation of reward expectancy, and incentive motivation [46]. The argument about addiction as a disease may be confused with a predisposition to substance and nonsubstance rewards relative to the extreme effect of drugs of abuse on brain neurochemistry. The former sets up an individual to be at high risk through both genetic polymorphisms in reward genes as well as harmful epigenetic insult. Some Psychologists, even with all the data, still infer that addiction is not a disease [47]. Elevated stress levels, together with polymorphisms (genetic variations) of various dopaminergic genes and the genes related to other neurotransmitters (and their genetic variants), and may have an additive effect on vulnerability to various addictions [48]. In this regard, Vanyukov, et al. [48] suggested based on review that whereas the gateway hypothesis does not specify mechanistic connections between “stages,” and does not extend to the risks for addictions the concept of common liability to addictions may be more parsimonious. The latter theory is grounded in genetic theory and supported by data identifying common sources of variation in the risk for specific addictions (e.g., RDS). This commonality has identifiable neurobiological substrate and plausible evolutionary explanations.

Over many years the controversy of dopamine involvement in especially “pleasure” has led to confusion concerning separating motivation from actual pleasure (wanting versus liking) [49]. We take the position that animal studies cannot provide real clinical information as described by self-reports in humans. As mentioned earlier and in the abstract, on November 23rd, 2017, evidence for our concerns was discovered [50]

In essence, although nonhuman primate brains are similar to our own, the disparity between other primates and those of human cognitive abilities tells us that surface similarity is not the whole story. Sousa et al. [50] small case found various differentially expressed genes, to associate with pleasure related systems. Furthermore, the dopaminergic interneurons located in the human neocortex were absent from the neocortex of nonhuman African apes. Such differences in neuronal transcriptional programs may underlie a variety of neurodevelopmental disorders.

In simpler terms, the system controls the production of dopamine, a chemical messenger that plays a significant role in pleasure and rewards. The senior author, Dr. Nenad Sestan from Yale, stated: “Humans have evolved a dopamine system that is different than the one in chimpanzees.” This may explain why the behavior of humans is so unique from that of non-human primates, even though our brains are so surprisingly similar, Sestan said: “It might also shed light on why people are vulnerable to mental disorders such as autism (possibly even addiction).” Remarkably, this research finding emerged from an extensive, multicenter collaboration to compare the brains across several species. These researchers examined 247 specimens of neural tissue from six humans, five chimpanzees, and five macaque monkeys. Moreover, these investigators analyzed which genes were turned on or off in 16 regions of the brain. While the differences among species were subtle, **there was** a **remarkable contrast in** the **neocortices**, specifically in an area of the brain that is much more developed in humans than in chimpanzees. In fact, these researchers found that a gene called tyrosine hydroxylase (TH) for the enzyme, responsible for the production of dopamine, was expressed in the neocortex of humans, but not chimpanzees. As discussed earlier, dopamine is best known for its essential role within the brain’s reward system; the very system that responds to everything from sex, to gambling, to food, and to addictive drugs. However, dopamine also assists in regulating emotional responses, memory, and movement. Notably, abnormal dopamine levels have been linked to disorders including Parkinson’s, schizophrenia and spectrum disorders such as autism and addiction or RDS.

Nora Volkow, the director of NIDA, pointed out that one alluring possibility is that the neurotransmitter dopamine plays a substantial role in humans’ ability to pursue various rewards that are perhaps months or even years away in the future. This same idea has been suggested by Dr. Robert Sapolsky, a professor of biology and neurology at Stanford University. Dr. Sapolsky cited evidence that dopamine levels rise dramatically in humans when we anticipate potential rewards that are uncertain and even far off in our futures, such as retirement or even the possible alterlife. This may explain what often motivates people to work for things that have no apparent short-term benefit [51]. In similar work, Volkow and Bale [52] proposed a model in which dopamine can favor NOW processes through phasic signaling in reward circuits or LATER processes through tonic signaling in control circuits. Specifically, they suggest that through its modulation of the orbitofrontal cortex, which processes salience attribution, dopamine also enables shilting from NOW to LATER, while its modulation of the insula, which processes interoceptive information, influences the probability of selecting NOW versus LATER actions based on an individual’s physiological state. This hypothesis further supports the concept that disruptions along these circuits contribute to diverse pathologies, including obesity and addiction or RDS.

#### Evolution proves the reliability of phenomenal introspection – when we introspect on data from our eyes or ears, such as whether one sees or smells food or a predator, we use the same part of the brain that introspects on hedonic tones and identifies their moral relevance.

#### Thus, the standard is consistency with hedonic act utilitarianism.

#### Our framework is also methodlogically justified:

#### 1] Apocalyptic images challenge dominant power structures – they contest the implausibility of inequitable structures producing catastrophe and generate imagination of futures of social justice outside of current narratives

Jessica Hurley 17, Assistant Professor in the Humanities at the University of Chicago, “Impossible Futures: Fictions of Risk in the Longue Durée”, Duke University Press, <https://read.dukeupress.edu/american-literature/article/89/4/761/132823/Impossible-Futures-Fictions-of-Risk-in-the-Longue>

If contemporary ecocriticism has a shared premise about environmental risk it is that genre is the key to both perceiving and, possibly, correcting ecological crisis. Frederick Buell’s 2003 From Apocalypse to Way of Life: Environmental Crisis in the American Century has established one of the most central oppositions of this paradigm. As his title suggests, Buell tells the story of a discourse that began in the apocalyptic mode in the 1960s and 70s, when discussions of “the immanent end of nature” most commonly took the form of “prophecy, revelation, climax, and extermination” before turning away from apocalypse when the prophesied ends failed to arrive (112, 78). Buell offers his suggestion for the appropriate literary mode for life lived within a crisis that is both unceasing and inescapable: new voices, “if wise enough….will abandon apocalypse for a sadder realism that looks closely at social and environmental changes in process and recognizes crisis as a place where people dwell” (202-3). In a world of threat, Buell demands a realism that might help us see risks more clearly and aid our survival.¶ Buell’s argument has become a broadly held view in contemporary risk theory and ecocriticism, overlapping fields in the social sciences and humanities that address the foundational question of second modernity: “how do you live when you are at such risk?” (Woodward 2009, 205).1 Such an assertion, however, assumes both that realism is a neutral descriptive practice and that apocalypse is not something that is happening now in places that we might not see, or cannot hear. This essay argues for the continuing importance of apocalyptic narrative forms in representations of environmental risk to disrupt conservative realisms that maintain the statusquo. Taking the ecological disaster of nuclear waste as my case study, I examine two fictional treatments of nuclear waste dumps that create different temporal structures within which the colonial history of the United States plays out. The first, a set of Department of Energy documents that use statistical modeling and fictional description to predict a set of realistic futures for the site of the Waste Isolation Pilot Plant in New Mexico (1991), creates a present that is fully knowable and a future that is fully predictable. Such an approach, I suggest, perpetuates the state logics of implausibility that have long undergirded settler colonialism in the United States. In contrast, Leslie Marmon Silko’s contemporaneous novel Almanac of the Dead (1991) uses its apocalyptic form to deconstruct the claims to verisimilitude that undergird state realism, transforming nuclear waste into a prophecy of the end of the United States rather than a means for imagining its continuation. In Almanac of the Dead, the presence of nuclear waste introjects a deep-time perspective into contemporary America, transforming the present into a speculative space where environmental catastrophe produces not only unevenly distributed damage but also revolutionary forms of social justice that insist on a truth that probability modeling cannot contain: that the future will be unimaginably different from the present, while the present, too, might yet be utterly different from the real that we think we know.¶ Nuclear waste is rarely treated in ecocriticism or risk theory, for several reasons: it is too manmade to be ecological; its catastrophes are ongoing, intentionally produced situations rather than sudden disasters; and it does not support the narrative that subtends ecocritical accounts of risk perception in which the nuclear threat gives rise to an awareness of other kinds of threat before reaching the end of its relevance at the end of the Cold War.2 In what follows, I argue that the failure of nuclear waste to fit into the critical frames created by ecocriticism and risk theory to date offers an opportunity to expand those frames and overcome some of their limitations, especially the impulse towards a paranoid, totalizing realism that Peter van Wyck (2005) has described as central to ecocriticism in the risk society. Nuclear waste has durational forms that dwarf the human. It therefore dwells less in the economy of risk as it is currently conceptualized and more in the blown-out realm of deep time. Inhabiting the temporal scale that has recently been christened the Anthropocene, the geological era defined by the impact of human activities on the world’s geology and climate, nuclear waste unsettles any attempt at realist description, unveiling the limits of human imagination at every turn.3 By analyzing risk society through a heuristic of nuclear waste, this essay offers a critique of nuclear colonialism and environmental racism. At the same time, it shows how the apocalyptic mode in deep time allows narratives of environmental harm and danger to move beyond the paranoid logic of risk. In the world of deep time, all that might come to pass will come to pass, sooner or later. The endless maybes of risk become certainties. The impossibilities of our own deaths and the deaths of everything else will come.

But so too will other impossibilities: talking macaws and alien visitors; the end of the colonial occupation of North America, perhaps, or a sudden human determination to let the world live. The end of capitalism may yet become more thinkable than the end of the world. Just wait long enough. Stranger things will happen.¶