

Final Frontier

Hope allows us to dream and push towards achieving fulfilment. Inspiring discovery and exploration, it is something uniquely personal and yet collectively universal. From the depths of our oceans to flying high and onto the moon, we have pushed periodically to break out from the cradle of humanity and into the final frontier. From merely seeing the stars – their luminescence sparking intrigue and forming the dream, through time, we have finally reached out. From the sounds of gas giants to the infra-red view of the history of our universe – we have begun to finally perceive the vast asymmetric beauty of our cosmos.

Still, for all our success, we have not had the enduring commitment to consistently reach the level of achievement that our intellectual and material resources would allow. We are bound to the reality of our inability to evolve our economics and governance into a form that opens up true exploration of what is beyond our planetary home. We must therefore consider what holds us back, reflect on where we are and define what should come next for humanity in order to restore a collective vision of hope leading into a truly self-sufficient future of exploration. So let us start with the past.

The first half of the twentieth century was defined by nationalism and isolationism culminating in successive world wars. Degrading dreams were twisted into living nightmares, all to serve the will of corrupted power in the hands of a few. The fruits of their ill-conceived labour led to the unimaginable death and destruction of countless millions. But from the ashes came a bipolar world order, shaped and moulded in the image of the victorious.

On one side - an order built of gradual mutual effort for understanding, growth and co-operation with its economic basis in capitalism. With time, the foundations were set for western civilisation to finally move past the boundaries that historically limited the freedoms of the individual in the realms of economics and scientific discovery. Thus, in the shape of peace, it

brought not only prosperity but the ability for nations to follow the dream of expanding knowledge of the universe we live in.

On the other side – an order built on the express vision of collectivisation. The ideal of shared existence extended to the collective ownership of state and purpose. This unique and revolutionary system spanned and organised resources and production capacity to a common cause across half the world from central Europe to Anadyr in the Far East. This system coupled with the renewal of the collective post war allowed for the capability to strive with a central vision towards achieving ideological victory through political and scientific endeavour. Thus, the Cold War was born. Their competition for superiority and domination through all domains of great power had begun. From proxy based ideological expression through to the race for militaristic technological domination, the two titans had by potential happenstance stumbled into the creation of a new great power domain: Space.

Achievement followed quickly. From the first blips of Sputnik to the first man in space, the Soviet Union opened the latch on the cradle of humanity. Hope was born with the first act of the space race. With advancement of ballistic technology from the military domain, both the United States and the Soviet Union expanded their goal to be the first to step on the Moon. And so, for the nineteen sixties, each side strove wilfully to achieve this goal. Until at last: man had risen from the cradle and left their first moon dust footprints on 20th July 1969. What should have been the first steps of many, however, did not materialise. Instead, the last steps in our endeavour to go beyond the boundaries of our biome were on December 14th, 1972.

Humanity retreated from the shoreline of an infinite ocean of scientific discovery. For in the heart of both East and West, the drive for achievement was eroded away by the limitations of each system. From the increasing economic and political headwinds facing the United States to

the militaristic financial burden on the centralised economy of the Soviet Union, both great powers withdrew. Political will crumbled in the face of their respective limitations. Thus, we became bereft of a truly transcendent goal that should have united us all. Instead, we turned inward in spirit and in mind, chasing the limited return of what each system offered.

Fifty-three years later and we are finally ready to try again via Artemis. The successor programme to Apollo includes, for the first time, both public and private sectors – leveraging cross-sectoral innovation, payload deployment cost reduction, reusable technology and vertical integration. This, hand in hand, with the recent financial refinement to the programme from NASA has provided the impetus to what may be finally our first serious steps into our solar system.

The re-direction of five billion dollars from the now cancelled Lunar Gateway project into the twenty billion dollar budget for the Ignition programme with its goal for permanent habitation on the moon is a welcome change. Ignition shall drive the long term return of humankind to the moon. Deployments of long term service assets including automation, communications, habitation and nuclear energy technology shall follow suit. All supported by vertical integration's ability to provide increased launch cadence. For the first time, co-ordination and engagement across all key sectors is permitting real adaptation in approach, development and deployment.

For all the good work done, we must remember the past as political will is still fickle, thus leaving long term commitment wanting. Increasing debt, stagnating economics, limited resources and volatile political cycles throughout the member nations of the Artemis Accords leave this programme open to the same risks of erosion that killed the Apollo programme. And

so, it shall be immensely difficult. For the projection of mankind into the stars shall require nations to truly commit to a shared vision but more importantly: to each other.

While the Artemis Accords opened the door on global co-operation, more nations must be included as only a third of UN member states are signatories. Currently, China and Russia, with their respective economic might and space-faring legacy, are not signatories. Political and cultural provincialism must be put aside for humanity's sake. Furthermore, the non-binding nature of the current accords only adds to the aforementioned weakness of political and economic will. In the face of such resistance, we must remember that sustained collaborative policy is possible and has achieved success with the formation and continued growth of the European Union as a prime example.

Therefore, let us step up with resolve and implement a truly global space treaty organisation – one with all nations engaged and committing 0.5% of GDP per annum to collective public-private development. The goal of which shall be the progressive dismantling of key global trade barriers in order to gear up our collective global economy for enhanced resource and space exploration. Investment - continuous and stable - would stimulate rapid technological progression in the areas of artificial intelligence, computation, nuclear energy and propulsion technology for the benefit of all. For we all must remember that the previous space race primed the world for the advent of the information technology era.

Key to our success shall be commitment from private innovation in equal measure. With the advent of SpaceX and other sector leaders, cost-effective strides have been made in nuclear reactor miniaturisation, propulsion, payload capacity, reuse technology and vertical integration. Efficient technological evolution ensures that space is cheaper to deploy and operate in. Viability

is key for commitment, an antidote to political fragility and the method for hope to become reality. Only then shall Space become a domain for all.