Where is everybody?

Considering the Fermi paradox and the silence of Google lurkers (2013):

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Taking advantage of the dead of a Saturday morning at the college, I managed to catch up on paperwork. The drive in along Barnet Highway and Hastings St. at 7:30 AM was unusually smooth and quiet. On automatic pilot most of the way, I reflected on last night's Google browsing on the Drake Equation: the proposed mathematical formula projecting the probability of the existence of intelligent beings (ETIs) beyond the earth…

From the information touched upon, it seemed, *prima facie*, highly improbable that self-aware creatures with advanced technology would emerge only once in this galaxy. That such a single occurrence would be on this planet at this very moment—seemed even more improbable. Apparently, hundreds of thousands of planets with liquid surface water— almost certainly exist in our galactic neighbourhood of the third Orion arm of the Milky Way. Even if only the tiny fraction of those 'Goldilocks' (neither too hot nor too cold) planets gave rise to self-replicating cell formation, that number would still be staggering large. Even if a far tinier fraction of those cell-replicating cells evolved over eons to become intelligent technology wielding life-forms: it still seems mathematically improbable that *homo sapiens* are 'alone' in the galaxy.

But then comes the intriguing Fermi paradox: *where is everybody*? The simple question posed by physicist Enrico Fermi to his colleague, Frank Drake in 1950, tantalizingly challenges an optimistic factoring of the Drake equation. If the probability of ETIs with advanced technology elsewhere is the universe is almost certain: why haven't we been already contacted?

In considering that question last night, I recalled the view out the window of an aircraft approaching the Los Angeles airport a few years ago. The vast light grids stretching across the San Fernando Valley looked hardly different than a starry sky. Just as every light lit a street, wherein dwelt perhaps hundreds of private individuals *(*"island universes" to borrow an Aldous Huxley expression) it occurred that those dots of light representing the millions of people living below were not unlike the pinpoints of light of distant stars and galaxies in the visible firmament. Just as the streetlights seemed to represent countless numbers of people, invisible from the sky, the winking stars and the faint pinpoints of distant galaxies surely concealed innumerable earth-like planets with sentient life…

Indeed, one can imagine ETIs on distant planets also looking upwards at the faint pinpoint of light from our star. Of course, the light they would be seeing would be from our distant past, just as the light from their stars has taken hundreds—even thousands— of years to reach our eyes. So whatever wonderment or curiosity we share with those imagined ETIs— we do not share a real-time 'now'….

Moreover, what hope is there of contact between star systems so incomprehensibly far flung?

On a scaled map of the Milky Way galaxy, even Proxima Centauri— the nearest solar system and about two light years distant— is squeezed into the same pinpoint of light that represents our sun. According to last night's Googling, the voyager spacecraft that was launched more than thirty years ago and which has already passed far beyond Pluto—will not reach Proxima Centauri for another 40,000 years!

So, the paradox seems to be that that the universe may be teeming with potential life-supporting environments past, future— even present—but the odds of communication between any two such intelligent species across the incomprehensible vastness of both space and time is close to zero…

Of course, there is also the possibility that there is ETI based on a different chemistry than ours. But with such beings so incomprehensibly alien— how are we to know of their existence any more than a bacterium 'knows' of ours?

Meanwhile, our expectations for discovering even traces of exobiology have considerably lowered in the last generation. As a robotic arm of the Mars Rover scrapes into sterile red dust to find traces of water, it is amusing to consider that not so long before that, fear of a Martian invasion ('*War of the Worlds,*' etc.) gripped the public imagination.

There has been recent hope that primitive exobiology might be discovered within our solar system. The presumed ocean beneath the ice of Jupiter's moon, Europa, has been touted as a tantalizing place to look. Still, according to the Drake Equation. there are several more 'filters' that primitive self-replicating species needs to pass through to become ETI. Each of these evolutionary filters might successively eliminate potential candidates of species capable of interplanetary communication and exploration. The final filter— beyond which ETIs are imagined having acquired the technology for interplanetary communication and exploration— may well be the most eliminative filter of all. In the most pessimistic view— no species in our galaxy has yet passed through it. According to a Rare Earth Hypothesis, *homo sapiens* may be one of the few species in the galaxy on the threshold of that final filter.

Yet on the very cusp of interplanetary exploration, species with advanced technology may be doomed to self-destruct. A chilling analogy often used for such biological determinism is of the growing colony of bacteria in a Petri dish which inevitably poisons itself in its own effluence. With our weapons of mass destruction and slow cooking of the biosphere— such a fate for *homo sapiens* is hardly far-fetched.

If *homo sapiens* are effectively alone in this isolated corner of the galaxy, clearly our primary duty is to protect our fragile biosphere… If we manage, against the odds, to survive a few more centuries— perhaps some artefacts of the better aspects of ourselves deserve to be cast deep into the cosmos. Just as this planet may have been 'seeded' by inorganic elements carried by comets from beyond our solar system, perhaps eons after our passing some 'seed' of ourselves might be transplanted in a pristine world. As fragile as that hope may be, the possibility of passing on some aspect of our brief flowering should inspire us no less...

It was only in approaching my left lane turnoff at Clark Drive, where attention sprung back to the here and now. With the cranes of the dock to the right, I was fleetingly reminded that this was the neighborhood of the chicken slaughterhouse and the notorious 'kitty stroll' where reptilian Johns picked up underage girls, many of them of First Nations origin. Appropriate, it seemed, that hope for humanity be engendered in the very epicentre of the city's despair…

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On the much busier drive back in the early afternoon, traffic slowed to a crawl before the Hastings-Nanaimo intersection. It was in that delay that my attention turned briefly back to the Fermi Paradox:

Despite all the evidence of our planetary solitude it was no less fascinating to consider that the first radio signals, broadcast by Marconi a century ago, have already scattered outwards to a one hundred light year radius. Meanwhile, through the last half century, arrays of radio-telescopes have been combing the heavens in search of any unusual patterns amid the bleeps and crackles of the ever-expanding cosmos. Apparently, there have been tantalizing nibbles but as yet no undisputed signal from an ETI source…

Those who believe that ETIs have already intercepted our radio signals have suggested that the absence of confirmation may be due to our incapability of interpreting ongoing signals of super-intelligence. Perhaps due to a difference in space-time perception an ET communication signal could be stretched out to centuries or squeezed in a microsecond— thus impossible for us to recognize. Another possibility is that listening ETIs choose not to communicate with a species as insignificant and boring as ours. To use a terrestrial analogy: if there were to be some breakthrough in interspecies communication: would we rather it be with a whale or with an ant? Then there are those— many more than one cares to acknowledge— who believe they are regularly communicating with ETIs hidden among us...

Finally, the Fermi paradox stuck me is an entirely different context:

For at least the last decade, the internet in many countries has become quite as ubiquitous as TV. Considering how easy it is now to track down a telephone number or email address— it is revealing that among the hundreds of acquaintances, colleagues and students I have known over the last forty-five years—I have yet to receive a single message. Surely over the last fifteen years, a half-dozen 'lurkers' would have curiously Googled my name. The odds are that at least one of them would have sent an out of the blue greeting! So *where is everybody*?

Perhaps there is in that, some telling analogy with the cosmic silence.

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