

Unobtainium

Here are some examples of special resources not found on present-day Earth, which *are* reasonable to include in a science-fiction universe.

Antimatter

The visible universe is dominated by “normal” matter. Antimatter doesn’t seem to exist naturally in large masses, for a very good reason: if a large quantity of antimatter was produced by some natural process, it would annihilate itself spectacularly the moment it encountered normal matter.

Antimatter is thus likely to be produced only in a laboratory – but if some odd natural process produced large quantities of antimatter, then somehow *confined* it away from contact with normal matter, it could be “mined.” The engineering processes involved would be difficult, but any civilization that already uses artificial antimatter for power distribution will be up to the challenge.

Antimatter, of course, is the basic power source in the *Star Trek* universe. The television series has never established whether antimatter is produced or mined, but given the wealth of other odd materials in that universe, natural production seems possible . . .

Artifacts

Alien or Precursor devices of technology beyond what human civilization can achieve are fabulously valuable. If the super-advanced aliens are still around, getting their artifacts requires finding something they think is worth trading for, and avoiding any restrictions their government may place on giving high tech to primitive humans. If the aliens are extinct (or have “passed on to a higher state of being”) then finding artifacts is a cross between prospecting and archaeology, and the chief dangers are claim jumpers and huge rolling stone balls.

Exotic Biologicals

Living organisms produce a bewildering variety of chemicals even on Earth, where almost everything uses the same basic biochemistry. On alien worlds, where life may be based on other chemical processes, truly exotic substances will be produced.

Any one biochemical is unlikely to be useful, but biologists and pharmaceutical researchers make their living by investigating thousands of them at a time. Any

living world might yield useful, yet previously unknown, industrial chemicals or drugs. Meanwhile, alien organisms will produce other substances, valuable for their rarity or curiosity value: exotic woods, unusual amber-like secretions, and so on.

The classic example of an exotic biological – the basis for an entire series of novels, in fact – is the *melange* spice in Frank Herbert’s *Dune*.

Exotic Matter

Quantum black holes, magnetic monopoles, cosmic string loops, or negative matter could all be valuable in a future society. Even if there’s no industrial use for them, scientists will likely pay good money for samples to study, and some types of weird matter may be essential for antigravity or FTL travel. Most of them are likely to be *very* hard to collect and store.

Transuranic Elements

It’s a common cliché to invent “new” chemical elements that were somehow unknown to pre-spaceflight society, but which are critical to interstellar society. In fact, there are no gaps in the periodic table of the elements; we already know all the chemical building blocks of matter, from here to the furthest star.

There is one set of chemical elements – the stable *transuranic* elements – that have not been found on Earth, but which could conceivably be found in other star systems. As atomic nuclei become heavier, they become more unstable and more radioactive, which is why elements heavier than uranium aren’t found in nature and must be produced in a laboratory. However, there are theoretical “islands of stability,” ranges of atomic weights well beyond that of uranium, in which nuclei might be more or less stable. Tiny amounts of such ultra-heavy metals might be produced in supernova explosions; if some natural process could concentrate them, it might be possible to find and mine them.

What properties do these stable transuranics have? It’s anyone’s guess, since no one has found or produced any of them yet. Perhaps some superscience technologies depend on the unusual properties of these weird substances. Several pieces of classic science fiction, particularly Poul Anderson’s “Polesotechnic League” stories, turn on the rarity and special properties of stable transuranics.

Technology

Advances in technology have a variety of effects on a society’s economy. Every new technology increases the *variety* of goods and services, and creates a demand for items that didn’t even exist before the technology was

developed. New technologies create brand-new industries, each with its own pattern of supply and demand, and this can increase a society’s economic volume.

Another profound effect of new technology is on *productivity*. A worker

who is given better tools will often produce more goods, or more useful services, in the same amount of time. Technological advances can also make the use of resources more efficient, so that more goods can be produced with the same amount of energy and raw materials.