

Excerpt from Mitsuru's Chronicle

1996- Binary (010101) meets Quaternary (AGCTAG); Mickey mouse meets a whale.

Deluge of copied references and enamored of binary digital

Do you have a habit to copy scientific references? I tell you the truth : sooner or later your desk and office will be buried with references (or at least your cabinet will be filled with references). The hefty boxes of references (along with all my belongings) had to sail the Pacific ocean 1991, and the woe of accumulating references was serious. Fortunately I grabbed a clue to be a powerful solution as early as December 1991 immediately after my job started at Doheny Eye Institute & USC. It was online access to MEDLINE database (*citation* 6 and 7). I downloaded the abstracts, sorted by index, and saved under my own categorized hierarchy as binary digital files. How compact the binary digital files are! A few ZIP-disks (iomega) can contain all abstracts. I swiftly shifted from a user to a digital zealot, and in impeccable timing the World Wide Web and multimedia were innovated. My lunacy on binary digital crossed a boarder which people usually do not : writing own source codes (program) by C/C++ language (Thompson K, Kernighan BW, Ritchie DM, 1970s; Stroustrup B, 1983, *citation* 8). Through this experience I truly understood the nature and the power of binary digital. No matter how they look diversified on a monitor or from speaker (text, picture, sound), the hard truth is that all of them are just "01011011" and nothing else. The trick is an interpreter (software) which serves as a magic-filter.

Binary (100101) meets Quaternary (AGTCTG)

The idea, that an appropriately written program for biological language (AGCT) would explain the regulation of gene-expression (developmental timing, spatial-topological pattern), has evolved naturally through my dual career as a molecular geneticist and an entry level C-programmer. The question here is the following: Is binary language powerful enough to elucidate quaternary language? My opinion is "yes": binary is more robust than quaternary; the fewer characters, the more powerful.

Here is a power pyramid of languages based upon the number of characters.

<i>the strongest</i>	
Binary (01010)	2
Quaternary (AGCTAGCT)	4
Protein (Ala, Pro, Glu, ...)	20
English (a, b, c, d,)	26
German (26 + ä, ö, ü, ß)	30
Spanish (26 + ñ; á, é, í, ó, ú; ü)	33 ties with
Russian (Cyrillic :а, б, в, г, д, е, ё, ж, з, и, й, к, л, м, н, о, п, р, с, т, у, ф, х, ц, ч, ш, щ, ь, ы, ь, э, ю, я)	33
Portuguese (26 + ã, õ; á, é, í, ó, ú; à; â, ê, ô; ç)	38
French (26 + accent aigu {é}; accent grave {à, è, ù}; accent circonflexe {â, ê, î, ô, û}; cédille {ç}; tréma {ë, ï, ü})	39
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My intent of this pyramid demonstration is to emphasize the power of simplicity, Binary System (二進法) . Logically speaking, this demonstration doesn't make sense, because of comparison between mixing fields: computer, biochemistry, and Letter-and-Art languages. Nevertheless, there is certain truth in this pyramid. The more simpler, the more stronger. I knew that not only the number of letters, but also the simpler grammar is the other key for the power. I want to discuss this pyramid illustration by different angle later. That is the comparison of the grammatical simplicity and complexities among the Letter-and-Art languages.

Only when we efficiently utilize the power of Binary System (computer hardware and software) for language education and social interaction, we may have **multiple language skills** at our hands. Based on my experience the listening audible stuffs and speaking out practices is the best foreign language lessons . The mother tongue (母国語) is the core and the pride of everyone all around the world. Let's try to show mutual lingual friendliness each other with Cell Phone at our hands.

Mickey mouse meets a whale

There was a tiny illustration on my original Geocities.com, Mitsuru's "Animal & Plant"

section.

Minor editing note 7/1/2025 : There is the opinion I heard recently. Due to Chinese letters signify (or hold) meanings as each one letter itself, it stands on different ground to Western alphabets. It better stays out of this comparison table. After hearing this opinion I deleted Chinese and Japanese from the this pyramid table.

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