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Review Article

Googology in the Ancient Buddhism Literature

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Abstract

Googology (the study of very large numbers) was used to accurately describe time and distance in the Buddha's sutras. However, as time passed, many scholars forgot the original meanings of these numbers. This is especially evident in modern translations, where large numbers are often translated as "countless" or "infinite." As a result, the original meaning of the Buddha's teachings has not been fully expressed. Through successive translations between languages, essential aspects of the Buddha's teachings may be lost or obscured. Therefore, this article focuses specifically on these large numbers, examining their original meanings and intended uses. By doing so, it aims to provide readers with a better understanding of Buddhist literature and the teachings of the Buddha.

Keywords: Googology; Buddhism Googology; Large Numbers; Sanskrit; Buddha; Bodhisattva; Shakyamuni Buddha; Anabhilāpya (unspeakable); Ganger River Sand; Buddhism Archaeology; Asaṃkhyeya Chapter; Avataṃsaka Sūtra (Flower Garland Sūtra or Huayan Sutra)

Introduction

Googology denotes the study and systematic construction of extremely large numbers. It is particularly concerned with numbers that cannot feasibly be written in ordinary decimal notation and therefore require specialized notation, recursive definitions, rapidly growing functions, or increasingly powerful operations. In ancient Buddhism literature, it was used to accurately describe enormous time and distance, fit into the scales of the cosmos, multiverses, huge merits of saints, extremely ancient periods in Buddhism Archaeology and the nature of enlightenment. Currently, the majority of Buddhist literature is written in Chinese characters because the original Sanskrit texts and scripts from India were lost due to historical reasons. For example, during Muslim conqueror, the famous Nalanda Mahavihara, an ancient Buddhist monastery and center of learning with billions of sutra collections, were eliminated – "the fire set on by the attackers is said to have burned for three months" [1]. As a result, the original Indian texts were lost. Now, many Chinese translations have been further translated into multiple languages, including but not limited to English, German, French, Spanish, Japanese, and modern Indian languages. However, over time, many scholars have forgotten the original meanings of these numerical terms. This is especially evident in modern translations, where large numbers are often translated as "countless" or "infinite." For example, in the Sutra of the Great Vows of Kṣitigarbha Bodhisattva, Buddha told a pass event related to the past life of Kṣitigarbha Bodhisattva who was a king when there was on-going famine. This event happened apramāṇa asaṃkhyeya nayuta anabhilāpya kalpas ago [2]. The worlds "apramāṇa", "asaṃkhyeya", "nayuta" and "anabhilāpya" are presenting accurate numbers (Table 1); "kalpa" is a time unit [3]. However, modern translation translated the number words to "countless" or just use the word "ancient" (like once upon a time), which lead to thoughts that the sutra was telling a novel or legend rather than documenting serious teaching and solid facts.

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Table 1: Names for successive numerical denominations. The system consists of 123 levels, derived from 122 successive exponent-doubling stages following the initial value of 10^7 (koṭi). The suffix "-parivarta," meaning "turning", denotes the squaring of the pre-ceding numerical value.

Buddhist numerical term	Modern mathematical expression
俱胝 (koṭi)	10^7
阿庾多 (ayuta)	10^14
那由他 (nayuta)	10^28
頻波羅 (bimbara)	10^56
矜羯羅 (kiṃkara)	10^112
阿伽羅 (agara)	10^224
最勝 (pravara)	10^448
摩婆羅 (mapara)	10^896
阿婆羅 (apara)	10^1792
多婆羅 (tapara)	10^3584
界分 (sīma)	10^7168
普摩 (yama)	10^14336
禰摩 (nema)	10^28672
阿婆鈐 (avaga)	10^57344
彌伽婆 (mṛgava)	10^114688
毘擺伽 (virāga)	10^229376
毘伽婆 (vigava)	10^458752
僧羯邏摩 (saṃkrama)	10^917504
毘薩羅 (visāra)	10^1835008
毘贍婆 (vibhaja)	10^3670016
毘盛伽 (vijaṅgha)	10^7340032
毘素陀 (viśodhana)	10^14680064
毘婆訶 (vivāha)	10^29360128
毘薄底 (vibhakta)	10^58720256
毘佉擔 (vikhāta)	10^117440512
稱量 (ilana)	10^234881024
一持 (avana)	10^469762048
異路 (thāvana)	10^939524096
顛倒 (viparyaya)	10^1879048192
三末耶 (samaya)	10^3758096384
毘睹羅 (viturna)	10^7516192768
奚婆羅 (hetura)	10^15032385536
伺察 (vicāra)	10^30064771072
周廣 (vyavasta)	10^60129542144
高出 (samudgata)	10^120259084288
最妙 (parama)	10^240518168576
泥羅婆 (nirava)	10^481036337152
訶理婆 (hariva)	10^962072674304
一動 (ekaja)	10^1924145348608
訶理蒲 (haripu)	10^3848290697216

訶理三 (harisa)	10^7696581394432
奚魯伽 (heruka)	10^15393162788864
達攞步陀 (dalabuddha)	10^30786325577728
訶魯那 (haruṇa)	10^61572651155456
摩魯陀 (maruta)	10^123145302310912
懺慕陀 (kṣamudra)	10^246290604621824
墅攞陀 (erada)	10^492581209243648
摩魯摩 (maruma)	10^985162418487296
調伏 (dauvasa)	10^1970324836974592
離憍慢 (nikṛṣṭa)	10^3940649673949184
不動 (acala)	10^7881299347898368
極量 (paramāṇa)	10^15762598695796736
阿麼怛羅 (amātra)	10^31525197391593472
勃麼怛羅 (brahmātra)	10^63050394783186944
伽麼怛羅 (gāmātra)	10^126100789566373888
那麼怛羅 (nāmātra)	10^252201579132747776
奚麼怛羅 (hemātra)	10^504403158265495552
鞞麼怛羅 (vimātra)	10^1008806316530991104
鉢羅麼怛羅 (paramātra)	10^2017612633061982208
尸婆麼怛羅 (śivamātra)	10^4035225266123964416
翳羅 (īra)	10^8070450532247928832
薜羅 (vīra)	10^16140901064495857664
諦羅 (tīra)	10^32281802128991715328
偈羅 (gīra)	10^64563604257983430656
窣步羅 (subhura)	10^129127208515966861312
泥羅 (nīra)	10^258254417031933722624
計羅 (kīra)	10^516508834063867445248
細羅 (sīra)	10^10330176681277348904960
睥羅 (pīra)	10^20660353362554699780992
謎羅 (mīra)	10^4132070672510939561984
娑攞荼 (sārada)	10^8264141345021879123968
謎魯陀 (meruda)	10^16528282690043758247936
契魯陀 (kheruda)	10^330565653800875164958720
摩睹羅 (madhura)	10^661131307601750329917440
娑母羅 (samura)	10^1322262615203500659834880
阿野娑 (anāsa)	10^2644525230407001319669760
伽麼羅 (kamala)	10^5289050460814002639339520
摩伽婆 (maghava)	10^1057810092162800527867904
阿怛羅 (atala)	10^2115620184325601055735808
醯魯耶 (hairaya)	10^4231240368651202111471616
薜魯婆 (veruva)	10^8462480737302404222943232
羯羅婆 (karava)	10^16924961474604808445886464
訶婆婆 (habhāva)	10^33849922949209616891772928
毘婆羅 (vibhāra)	10^67699845898419233783545856

那婆羅 (navara)	10^135399691796838467567091712
摩攞羅 (malara)	10^270799383593676935134183424
娑婆羅 (sabhāra)	10^541598767187353870268366848
迷攞普 (merupu)	10^1083197534374707740536733696
者麼羅 (jāmara)	10^216639506874941548107346739 2
馱麼羅 (dhāmara)	10^433279013749883096214693478 4
鉢攞麼陀 (paramārtha)	10^866558027499766192429386956 8
毘伽摩 (vigama)	10^173311605499953238485877391 36
烏波跋多 (upapta)	10^346623210999906476971754782 72
演說 (vyākhyāna)	10^693246421999812953943509565 44
無盡 (ananta)	10^138649284399962590788701913088
出生 (utpāda)	10^277298568799925181577403826176
無我 (anātman)	10^554597137599850363154807652352
阿畔多 (apanta)	10^110919427519970072630961530 4704
青蓮華 (utpala)	10^221838855039940145261923060 9408
鉢頭摩 (padma)	10^443677710079880290523846121 8816
僧祇 (saṃkhyā)	10^887355420159760581047692243 7632
趣 (gati)	10^177471084031952116209538448 75264
至 (prāpta)	10^354942168063904232419076897 50528
阿僧祇 (asaṃkhyeya)	10^709884336127808464838153795 01056
阿僧祇轉 (asaṃkhyeya-parivarta)	10^141976867225561692967630759002112
無量 (apramāṇa / ameya)	10^283953734451123385935261518004224
無量轉 (square of ameya)	10^567907468902246771870523036008448
無邊 (aparyanta)	10^113581493780449354374104607201 6896
無邊轉 (square of aparyanta)	10^227162987560898708748209214403 3792
無等 (atulyā)	10^454325975121797417496418428806 7584
無等轉 (square of atulyā)	10^908651950243594834992836857613 5168
不可數 (agaṇeya) — uncounted	10^181730390048718966998567371522703 36
不可數轉 (square of agaṇeya)	10^363460780097437933997134743045406 72
不可稱 (atula / unreckonable)	10^726921560194875867994269486090813 44
不可稱轉 (square of atula)	10^145384312038975173598853897218162688
不可思 (acintya) — inconceivable	10^290768624077950347197707794436325376
不可思轉 (square of acintya)	10^581537248155900694395415588872650752
不可量 (ameya) — immeasurable	10^116307449631180138870983117774530 1504
不可量轉 (square of ameya)	10^232614899262360277758853897218162688
不可說 (anabhilāpya) — unspeakable	10^465229798524720555516332471098120 6016
不可說轉 (anabhilāpya-parivarta)	10^930459597049441111032664942196241 2032
不可說不可說 (anabhilāpyānabhilāpya) — unspeakable-unspeakable	10^186091919409888222206532988439248 24064
不可說不可說轉 (anabhilāpyānabhilāpya-parivarta)	10^372183838819776444413065976878496 48128

Due to the limit of translators' knowledge on Googology, the original meaning of the Buddha's teachings has not been fully expressed. Through successive translations between languages, essential aspects of the Buddha's teachings may be lost or obscured. Therefore, this article focuses specifically on these large numbers, examining their original meanings and intended uses. By doing so, it aims to provide readers with a better understanding of Buddhist literature and the teachings of the Buddha.

Finite Does Not Equal to Countable by Ordinary Human

Large numbers play an important role in Buddhist literature. For example, Ganger River Sand (GRS) was mentioned more than thousands of times in Buddhism books, but very few people know its real meaning. One GRS is equal to the grain numbers of sands in the Ganger River – it is countless for a general human, but it is countable by the wisdom of ancient sages. There are many ways of calculate this number. The most popular opinion is that one GRS is around 10 to the power of 100 (10^100, one googol in modern Googology). In India's ancient math theory, one GRS is equal to 10^98 [3]. For an-other example, anabhilāpya ("unspeakable") was also mentioned more than thousands of times in Buddhism books, but almost no body realizes its real meaning. According to the Śikṣānanda recension, the number anabhilāpya is equal to 10^4 65229798524720555516332471098120601 6 (10 to the power of 46522979852472055551633247109812060 16). Such a number is uncountable by human standards or beyond the practical ability of humans to enumerate, but it is not considered huge from the perspective of the Buddha. For example, the terminology words of asaṃkhyeya ("incalculable"), acintya ("inconceivable"), ameya ("immeasurable"), and anabhilāpya ("unspeakable") are special definitions in Buddhism Googology to describe large numbers; the terms are named as "incalculable", "immeasurable", and "unspeakable", because it is out of capacity of the smart and long-live human to calculate it, to measure it and even speak of it. From high-dimensional Buddhas's/Buddhists' points of view, these are very accurate and meaningful definitions. For instance, the number anabhilāpya ("unspeakable") is at least equal to 10^46522979852472055551 63324710981206016 based on the Śikṣānanda recension, and it could be even larger according to another recension, which will be discussed in the later Discussion Section. Anyway, if a person try to speak from 1 to this number, even assuming this person can live forever, and work 24/7 without rest, it takes 3.17×104,652,297,985 ,247,205,555,163,324,710,981,206,009 years; assuming all human kinds (8 billion people) all count simultaneously, with each person saying 1 number per second, 24/7, it still takes 3.96 × 10^ (4,652, 297,985,247,205,555,163,324,710,981,205,987) trillion years. The age of the universe is only about 13.8 billion years according to the popular scientific theory, though this theory is being challenged [4,5]. Anyway, even if we assume the universe's life span is trillions of times longer than what is expected by the popular theory, until the universe came into end, the whole human beings could not able to completely speak out this number; therefore, that number is defined as anabhilāpya ("unspeakable"). Thus, for huge numbers, "finite" does not equal "countable by an ordinary human".

In Buddhist literature, the Buddha is described as sarvajña, meaning "one who knows all." There are multiple Buddhas that exist in pass, future and different universes. The best well-known Buddha is Shakyamuni Buddha. Each Buddha is portrayed as possessing knowledge extending across the universes, including the past and the future. This understanding of knowledge is reflected in the sophisticated mathematical and numerical concepts found in Buddhist texts.

Some theories [6,7] propose that human civilization is not limited to our present earthly civilization and that advanced civilizations may have existed in the distant past or elsewhere in the universe. Within this broader conceptual framework, the definition of a Buddha as one who possesses comprehensive knowledge encompasses knowledge of such civilizations as well. The Buddha could therefore communicate such knowledge to his disciples, who subsequently preserved and documented his teachings in the sutras.

Buddhism Canons and Avataṃsaka Sūtra

The Buddhist Canons—most notably the Qianlong Tripitaka [8]—preserve significant Buddhist teachings on advanced mathematics. In various texts, the Buddha and Bodhisattvas employ googology to conceptualize immense scales of time and distance. The Avataṃsaka Sūtra (Flower Garland Sūtra or Huayan Sutra) is currently the most prominent text to systematically address googology, featuring one of the most sophisticated systems of large numbers found in premodern Buddhist literature. Within this sutra, the Asaṃkhyeya Chapter is particularly significant, as it outlines a numerical progression ranging from standard large numbers (such as the koṭi, or 10^7) to extreme de-nominations, including the anabhilāpya ("unspeakable") and the anabhilāpyānabhilāpya parivarta (anabhilāpya to the power of 8). Due to the loss of the original Sanskrit texts during the Muslim conquests in India, the Chinese translations remain the most complete records. Consequently, this article occasionally utilizes Chinese characters to accurately convey the original terminology. So far, the most well-known translation for this chapter is made by Śikṣānanda (652–710 CE) that was a Buddhist monk and translator who produced one of the major Chinese translations of the Avataṃsaka Sūtra (Huayan Sutra) during the Tang dynasty. His translation was completed around 699 CE. The particular textual version of the Avataṃsaka Sūtra translated into Chinese by Śikṣānanda is called "Śikṣānanda recension", with the decree order and supports from the Chinese Queen, Wu Zetian. In Avataṃsaka Sūtra, this Asaṃkhyeya Chapter opens with the Bodhisattva Mind King asking the Buddha (in a dharma gathering) to explain a series of enormous numerical expressions that have already appeared throughout the scripture. Mind King Bodhisattva is highly enlightened, and actually already knows the answers; but he wants the world to know the meaning of math definitions according to the Buddha's knowledge system – Buddha praised him and then gave the mathematic teachings. Thus, the Buddha's teaching on Googology was able to be written down in this sutra (Table 1).

Within the Buddhist Canon, the Asaṃkhyeya Chapter of the Huayan Sutra outlines a sequence of numerical denominations that progress from standard large numbers to extraordinary magnitudes. This is achieved via a hierarchy of named denominations where each subsequent value is derived by squaring the previous one. The underlying mathematical operation is concise: x→x^2. Notably, the values constructed in this chapter are finite rather than infinite, as they are produced by a set of explicit recursive rules.

This framework establishes a formal vocabulary for quantities that far exceed the practical and conceptual limits of human counting.

Furthermore, the linguistic implications are quite striking. The meanings of several Sanskrit terms in Table 1 are highly descriptive, and some might even reflect specific cultural events from the past. For example, terms such as ilana (measure), viparyaya (confused), parama (supreme), dauvasa (conquer), and acala (immovable) provide clear imagery, as do paramāṇa (extreme amount), vyākhyāna (speak), ananta (limitless), utpāda (born), anatman (no-self), saṃkhyā (group calculation; "sam" meaning together), gati (destination), and prāpta (arrived). The botanical and spiritual imagery is seen in utpala (cyan lotus) and padma (celestial flower). This is most evident in the terms for vastness, such as asaṃkhyeya (incalculable even by a group together), apramāṇa (un-measurable), aparyanta (boundless), atulyā (incomparable), agaṇeya (uncountable), at-ula (unreckonable), acintya (inconceivable), ameya (immeasurable), anabhilāpya (un-speakable), and anabhilāpyānabhilāpya (unspeakable unspeakable).

Discussion

Avataṃsaka Sūtra, Eighty Rolls and Forty Rolls

It was mentioned that the scripts of the Avataṃsaka Sūtra entered China from different sources in different time periods. Some versions have more chapters, and totally, at least, 81 rolls. The above mentioned Śikṣānanda recension is based on eighty rolls; therefore, the Huayan Sutra he translated was also called "Eighty Rolls". In the majority of literature, when people refer to the Huayan Sutra, it refers to the Eighty Rolls. Com-paring different versions, for each chapter, they all kept the same meaning, but there are slight differences in the details. In addition to Śikṣānanda (652–710 CE), who was sponsored by the Queen and royal family of the Tang dynasty, there were two other famous translations: one is before the Tang dynasty and 60 rolls were translated into traditional Chinese, and another is translated by Prajñā (also written Prajña), an Indian Buddhist monk associated with Kashmir. Prajñā translated the reputable Avataṃsaka Sūtra – Forty Rolls, around a century after the Avataṃsaka Sūtra was translated into Chinese by Śikṣānanda.

In ancient southern India, there was an area called the kingdom of Uḍa. Their king, the Lion King (Figure 1), was a sincere Buddhist, and his family remained Buddhists for generations until they were conquered by Muslims and wiped out from history. Before that, this king wrote by hand, word by word, faithfully copying the original Sanskrit manuscript of the Avataṃsaka Sūtra from their rare royal family collections. Among them, forty rolls of the Avataṃsaka Sūtra scripts were given to the Tang Dynasty as a most precious gift. The King of the Tang Dynasty at that time (Zhenyuan Era) asked Prajñā, one of the best Indian scholars, to translate the 40 rolls into Chinese. His translation was called the Avataṃsaka Sūtra - Forty Rolls (briefly, "Forty Rolls"). Compared to previous versions, this version has significantly more detail on many events.

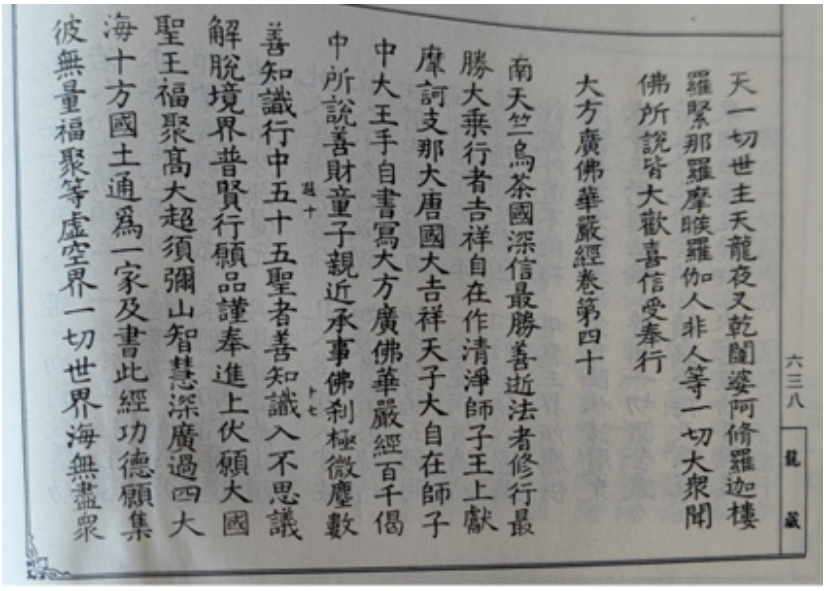

天一切世主天龍夜叉乾闥婆阿脩羅迦樓
羅緊那羅摩睺羅伽人非人等一切大衆聞
佛所說皆大歡喜信受奉行
大方廣佛華嚴經卷第四十
南天竺烏荼國深信最勝善逝法者修行最
勝大乘行者吉祥自在作清淨師子王上獻
摩訶支那大唐國大吉祥天子大自在師子
中大王手自書寫大方廣佛華嚴經百千偈
中所說善財童子親近承事佛剎極微塵數
善知識行中五十五聖者善知識入不思議
解脫境界普賢行願品謹奉進上伏願大國
聖王福聚高大超須彌山智慧深廣過四大
海十方國土通爲一家及書此經功德願集
彼無量福聚等虛空界一切世界海無盡衆

Figure 1: In the end of the Forty Rolls, it is documented how these scripts entered China. The picture shows the documentation: the Lion King in the kingdom of Uḍa, southern Indian, has deep belief on Buddhism. He handily wrote down part of the Avataṃsaka Sūtra scripts, and presented to the Big China Big Tang Country Big-blessing Heavenly Son (King of Tang Dynasty) as a precious gift. Historically, it is also one of important document that shows the name of "China" is not from a north tribe in later Song Dynasty, as a popular saying by many modern scholars.

In the tenth roll of the "Forty Rolls", Googology is discussed again by another Bodhisattva (named Root-Freedom-Lord Child), who was a student of Manjushri Bodhisattva. It was named "Bodhisattva Algebra." There are more details here than in the aforementioned Asaṃkhyeya Chapter:

1. In the above-mentioned Asaṃkhyeya Chapter, 俱胝 (koṭi) was not discussed, but it is assumed to be 10^7 by much of the modern literature. Detailed calculations are provided in this roll, documenting that "100 thousand is a louche (100×1,000=10^5); 100 luocha is 1 koṭi (100×10^5=10^7)."
2. More terms should be added to the Śikṣānanda recension (Table 1); the underlying mathematical operation is concise: x→x^2. Thus, many of the large number values mentioned above in Table 1 should be much larger. For example, according to Śikṣānanda translation, "apara" is 10^1792 in Table 1; however, according to the Forty Rolls, it should be 10^7168.
3. The applications of such Googology are mentioned in Roll 9 and Roll 10 of the Forty Rolls. Root-Freedom-Lord Child learned from Manjushri Bodhisattva and attained an enlightened state of mind called the All-Industry-Technology-God Power-Wisdom Door. He mentioned various fields of knowledge and technology, including but not limited to medicine, ghosts, construction, psychology, sounds, languages, cosmology, and kalpas (large time units). According to this Bodhisattva, this knowledge is so vast that even if the heavenly god, the Jade Emperor, could learn from the higher deity Brahma (the creator god in Hindu traditions who "creates" the universe and living beings, equivalent role to the God in Bible), the powerful Jade Emperor was unable to master the full knowledge by spending his entire life-time—1,000 heavenly years, equal to over 36 million years earth years [9,10]. However, this child Bodhisattva could understand all of this completely clearly by applying Googology calculations in less than a mini-second (a single thought period). In modern terms, this is far superior to an extremely-super quantum computer. In another word, when the Buddhism Googology (equal to software package) used by a highly-enlightened Bodhi-sattva (equal to extremely super computing power), it can be applied to calculate everything in the universe instantly.

How many rolls of Avatamsaka (Huayan) Sutra totally?

The answer is more than "unspeakable" amount. According to Buddhist tradition, Nāgārjuna Bodhisattva—known as Longshu Pusa (Dragon-Tree Bodhisattva), or "Dragon Brave Bodhisattva"—entered the Dragon King's realm, where the Avatamsaka (Huayan) Sutra is preserved and were authentically recorded from Buddha's and Bodhisattva's dharma-teaching meetings. Because the complete scripture was far too extensive to be kept by any human individuals, it is kept among the nāgas (dragon). There were three versions that the Dragon-Tree Bodhisattva had the options to choose from: the first is the long version, which has "unspeakable" amount of information that a human just could not complete the reading before passing away; the second is the middle version, which costs a long-live human to complete the reading using his whole lifetime without rests – technically im-possible to preach; the third is a short version – comparing to the whole sutra, the short version is like a Table of Index (according to the reputable Jing-Kong monk's explanation). Therefore, the Dragon-Tree Bodhisattva chose the short (the third) version to bring back to human realm. Even though it is the "short version", it is still very long; less than half of this version has entered into China, where 81 rolls were preserved. Before modern bound books, texts were often written on long sheets of paper or silk joined together and rolled up for archive storage. That is why the unit "roll" was used.

Other Ways to Describe Big Numbers

One of other ways to describe large numbers is to express how many sands or dusts or even particles: e.g. the grain numbers of Ganger River Sand, numbers of dusts or numbers of very tiny dusts/particles of one under-sky earth [3], two under-sky earths, three under-sky earth, four under sky earth's, Mt Meru [3,10], Buddha-land, World Seed, World Ocean, anabhilāpya (unspeakable) World Oceans. This kind of number is countless to human, but countable to saints. Counting the number of particles (dusts, sands, stones…) are a very important concept in ancient culture. They still keep traces in modern mathematics, e.g. thousand, calculus (in Latin, it means stone).

The above mentioned "under-sky" earth refers to a livable earth like ours, because the sky (atmosphere) is important for living beings. The name of our "under-sky" planet (earth) is called Jambudvipa [3,11]. The aforementioned anabhilāpyānabhilāpya is a huge number, but not infinite; according to the Huayan Sutra (when it discussed the numbers of Buddhas), the number of anabhilāpyānabhilāpya ("unspeakable unspeakable") is still smaller than the number of dusts of Jambudvipa (if it is crushed to dusts).

For extremely large numbers, Buddha sometimes gives a parable to help people under-stand. In the Lotus Sutra (Miaofa Lianhua Jing), Shakyamuni Buddha discussed the past events of Datongzhisheng (Big-Power-Wisdom-Super) Buddha. It was in an extremely distant ancient time, beyond the capacity of all mathematicians to calculate. Thus, Shakyamuni Buddha gave a parable: supposing someone can ground all the earth in the three-thousand-great-thousand world system (our universe) into ink. Then, after traveling eastward across a thousand Buddha-lands (universes), that person placed down one ink dot, as tiny as a very small speck of dust. After traveling another thousand universes, they placed down another such tiny dot. In this way, they continued until all the ink they had made was exhausted. All the universes mentioned above—both those with dots and those without dots—were then crushed into particles. The number of kalpas (a way of describing time) from the time of Big-Power-Wisdom-Super Buddha to the time of Shakyamuni Buddha is much greater than the number of such particles. Then Shakyamuni Buddha pointed out that a Buddha can see this clearly, just as if it were happening now, through

the Buddha's unobstructed wisdom, even though it is beyond (human scientists') ability to measure.

The All-mighty Buddha and Bodhisattva

In the of Asaṃkhyeya Chapter (in the Avatamsaka Sutra - Eighty Rolls), Buddha gave a speech to Mind-King Bodhisattva using the Psalm of "Unspeakable", so people can have more understanding on the mathematics and better appreciation of the merits of Bodhisattva. In this Psalm, it uses huge finite numbers, such as "unspeakable", "unspeakable unspeakable", "all sentient beings in ten directions (meaning all universes, east, west, north, south, 4 corners, up and down)", "dusts of Buddha-lands", and algebra based on such finite numbers, to compare with the infinite merits of highly-enlightened Buddhas/Bodhisattvas, like Pu Xian Pu Sa. Basically, no matter how huge the finite numbers are, they are less than the infinite (merits of Buddhas/Bodhisattvas). Also, it praises the wisdoms and powers of the All-mighty Buddha and Bodhisattva. It is a long poem, and some of sentences is literally translated as below to show the wisdom of a highly-status Bodhisattva:

"Unspeakable unspeakable —

filling all "unspeakable" things;

throughout unspeakable kalpas (one kalpa equal to a cycle of universe from being-destroyed-come into being again),

unable to complete the explanation of such unspeakables.

Unspeakable amounts of Buddha-lands (universes)

All crushed into particles of dusts.

Within every single particle, there are still unspeakable amounts of Buddha-lands;

……

Bodhisattva can explain the details clearly, while those who are "smart" in mathematics cannot tell.

……

(Even though) like such, the past, now, and future have non-boundaries,

Bodhisattva can see all clearly."

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