

## The Numbers of War: Did Sunzi Really Do Calculations?

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*In memory of Lucas Polymeros and Lieutenant George Papaconstantinou (“Barilla”),  
for their bravery in the Palavitsa railway sabotage, Greece, April the 13<sup>th</sup>, 1943.*

*This article investigates the use and significance of numbers in Sunzi’s “Art of War”, addressing both their empirical and symbolic dimensions. Drawing on classical sources—including the Analects, Book of Rites, Laozi, and Sima Qian—the article examines how numbers such as five, nine, and one hundred function in military, cultural, and ritual contexts. It analyzes translation challenges arising from ambiguous Chinese numerals and units of distance, and considers historical plausibility versus theoretical or idealized figures, particularly for army sizes and campaign logistics. The discussion highlights instances in which numeric references convey both practical guidance and broader philosophical or cultural meanings, including eternal change, completeness, and strategic deception. By situating Sunzi’s numerical usage within historical, linguistic, and cultural frameworks, the study attempts to provide a detailed picture of the interplay between arithmetic, military organization, and symbolic representation in early Chinese strategic thought.*

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### 1. To what extent are Sunzi’s numbers empirical?

#### 1.1. Different translations, different readings

Sunzi’s “Art of War” (孫子兵法 sūn zǐ bīng fǎ) has been translated into French as early as 1772 by a Jesuit missionary named Amiot (Lau 1965, 319). Father Amiot’s translation was probably too interpretative and drew fire; Ukkonen (2004, 3) cites Giles’ comment on Amiot’s effort: “[I]t contains a great deal that Sun Tzu did not write, and very little indeed of what he did”. An English translation was extant as soon as 1905 by captain E.F. Calthrop, but it was rendered from Japanese, and Giles

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(ibid.) was not harsh to comment that it was “*excessively bad*”, since “*ommissions were frequent; hard passages were willfully distorted or slurred over*”. Thus, Lionel Giles’ translation published in 1910 was, and still is, a cornerstone: Giles’ translation is more academic because it was rendered by a sinologist and not by a soldier; in other words, Giles’ translation could also illustrate the literary dimensions of this work.

This complex monument of Chinese thought has been approached by many angles and it never ceased to attain new meanings, according to historical context: the Russian 1950 and 1958 translations (Corneli, 1987, 420) are separated by the death of Stalin and the de-stalinization of the Soviet Union; Samuel Griffith’s translation in 1963 (ibid.) came during the zenith of Maoist China, the outbreak of worldwide guerilla warfare and the cold war; with the financial growth in the 1990’s and the dissolution of the Soviet Union, the West lost its great adversary, came to a “*naive belief in the advent of universal peace, universal prosperity and triumph of rationalism*” (Królikowski, 2016, 202), thus turning to alternative usages of Sunzi’s text: some publications even present this work as a must-read handbook for management. Various translations have brought up as many discussions as the original itself. In his book “*The Craft of Intelligence*”, Allen Dulles, the head of the CIA from 1953 to 1961, lauded Griffith’s translation (Corneli, 1987, 421 – 422); on the contrary, the acknowledged sinologist D. C. Lau (1965, 319) found that Griffith’s effort “*has turned out to be so disappointing*”. It is obvious that analyzing “*Master Sun’s Art of War*” is always fruitful.

Probably it is because of the broadness of its spirit that Sunzi’s text received relatively less philological attention —D. C. Lau has underlined this lack (Robin 1988, 212). Yet, even if one desires to adhere to a strict philological interpretation, the dangers of anachronism might be inherent in the reading of a millennia-old text. In the case of Sunzi’s work, one element pregnant with these dangers is the numbers themselves. While translating Master Sun’s masterpiece, a translator might be baffled about the proper course of action: should they translate those ancient numbers verbatim, risking that modern readers do not understand their significance? Or should they rather attempt, as is a current historical trend, to somehow convert them to present values —e.g. determine how many ounces of gold Sunzi’s “*pieces of gold*” (金 *jīn*) amount to? Numbers are nothing unrelated to war. Sunzi himself warns that “*If in times of peace one does calculations in his pavilion but still loses the war, it means that he calculated little.*”<sup>2</sup> Thus, one can practically not start a translation of the “*Art of War*” without deciding what the meaning of numbers is.

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<sup>2</sup> 兵法·始計·7.

In the field of mathematical —or more broadly positivist— approaches to Master Sun’s work, there have been already some considerable attempts of analysis. For instance, Emerson and Ordeshook (1994, 161) have attempted an interesting *“game-theoretic interpretation”*. Yet there are still numerous peculiarities in Sunzi’s numbers, which cannot be unseen. For instance, Sunzi does not use all digits in the same manner: number one is also an integral part of standard phrases; five possesses among others a ritual value; one hundred possesses a cultural connotation, etc. Simultaneously, if I am not mistaken, Giles’ translation does not contain a single number containing the digit eight.

Numbers in Chinese grammar are not always specific either. As Edward Pulleyblank (1995, 59) notes in his *“Outline of Classical Chinese Grammar”*, the nouns used as *“special numeral adjuncts”* are *“all ones that are frequent in a military context”*. Such discrepancies lead the researcher to wonder whether the favoured numbers possess a different value —and if yes, which.

## 1.2. Divisions of 1.000 chariots

Although one would not be able to interpret Sunzi’s numbers solely on an empirical basis, certain numerical values in Sunzi’s text appear to reflect empirical realities or standardized military scales of the late Zhou period. They often seem to reflect some sizes typical of a certain phase of the Zhou dynasty, i.e. the late Spring and Autumn and the early Warring States period (5<sup>th</sup> – 4<sup>th</sup> century BC). For instance, the very beginning of the *“Art of War”* holds that:<sup>3</sup>

*As a rule of waging war, for a thousand light chariots, for another thousand leather-shielded chariots, for a hundred thousand men clad with armor, and for a logistics line a thousand li<sup>4</sup> in length, there arise expenses for waging war both within the borders and beyond them: expenses of soldiers and honoured guests, [various small expenses] for materials such as glue and paint, and amounts spent on armours and vehicles. The daily expenses for all these amount to one thousand gold pieces. Only then can a force of one hundred thousand be summoned to arms.*

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<sup>3</sup> All translations in this article are rendered by the author, unless stated otherwise.

<sup>4</sup> 500 km (310 miles), conventionally. The li varied regionally and temporally.

These numbers are to be found broadly in the literature referring to that period. For instance, Confucius in the *Analects* (1: 5 & 11: 26) presents a force of “a thousand chariots” as a standard force for a state —to do so, he uses the same character that Sunzi uses for “heavy chariot” (乘 chéng). Furthermore, elsewhere in the *Analects* (5: 8) Confucius describes the size of different administrative units: a town should consist of a hundred households, and a clan should have a force of a hundred heavy chariots. The *Book of Rites* (禮記·坊記·3) warns that “As the ‘Book of Odes’ holds, ‘The people are greedy and disorderly, they take pleasure in venomous actions.’ ” Thus, it sets a boundary to the development of entities: “A state should not be larger than a thousand chariots, the walls of a feudal head-town should not be longer than one hundred embrasures, and the wealth of a family should not be greater than the amount needed for the employment of a hundred heavy chariots.” Another strategist’s work from the Warring States period (Lo 2012, 406), “*Master Wu*”,<sup>5</sup> answering to a hypothetical question of an invasion, also speaks of one thousand chariots.<sup>6</sup>

### 1.3. Detachments of 100.000 soldiers?

The battle arrays of Zhou dynasty were organized on a decimal basis. Another traditional book entitled “*Rites of the Zhou*” (周禮 zhōu lǐ) holds: “Five men constitute a squad (伍 wǔ), five squads constitute a platoon (兩 liǎng), four platoons constitute a company (卒 zú), five companies constitute a battalion (旅 lǚ), five battalions constitute a regiment (師 shī), and five regiments constitute an army (軍 jūn).”<sup>7</sup> This makes the following quantities: squads of five men, platoons of 25 men, companies of 100 men, battalions of 500 men, regiments of 2.500, and armies of 12.500. Surprisingly, when it comes to the size of an army, Sunzi’s “*Art of War*” exceeds the standard number by far: it takes “one hundred thousand” (十萬 shí wàn) as a standard size for an army. One must note that this number is eight times the number of a standard army in the Zhou dynasty’s administrative system. This discrepancy might be telling of the times in which the “*Art of War*” was composed; the small states of Spring and Autumn period have been replaced by larger entities, which will again inflate in the fourth century BC and end up controlling “vast territories endowed with the rich resources necessary to support

<sup>5</sup> 吳子(wú zǐ)

<sup>6</sup> 吳子·應變·3.

<sup>7</sup> 周禮·地官司徒·77.

*large standing armies*" (Juliano 1991, 25). The size of the states and their access to resources changed the nature of war, too: *"The face of war is changing, from the seasonal combat of aristocrats in chariots in the Spring and Autumn period to mass infantry bureaucratically organized and served by iron weapons and abundant horsepower in the Warring States period"* (Allen 2015, 1). The duration of wars and clashes changed according to the abundance of resources; as Zhao (2004, 603) notes, *"(...) during the entire Spring–Autumn period, almost all the wars were small and brief."* The same applied for a certain period within the Warring States, at least until the year 405 BC (ibid.). This element, along with Sunzi's severe warnings of the dangers of protracted war, might be helpful for the dating of the *"Art of War"*, as also for constructing some kind of historical context.

It is thus to infer that Sunzi describes basically an era of larger quantities and distances. Yet one should not forget that Sunzi talks of standard-sized detachments of *"armour-clad"* (帶甲 dài jiǎ) men, and not necessarily of poorly-equipped peasants or exonerated convicts that often served as auxiliaries. This observation leads to the hypothesis that Sunzi's ideal army might exceed 100.000 men. Even if the number *"one hundred thousand"* corresponded to the demographic and financial size of Chinese states, it would be impractical to employ such a large body of humans –the number either refers to a full-scale war of existential significance, or it is simply inflated. Answering the aforementioned hypothetical question of an invasion, Master Wu spoke of a much smaller force: one thousand chariots, ten thousand cavalry (a unit whose existence Sunzi only implies), but then he divided this power into five armies.

Strangely, the number one hundred thousand as a standard size for an army does not only appear in Sunzi. Sima Qian in his famous *"Records of the Grand Historian"*<sup>8</sup> narrates an astonishing stratagem devised by Sūn Bìn (孫臏) around 342/341 BC in order to lure the defenders away from favourable ground: *"Let the army of Qi state invade the territory of Wei and light up a hundred thousand torches. The next day, light fifty thousand. And the day after, light only thirty thousand."*<sup>9</sup> Seeing this, the general of the Wei (魏 wèi) state, named Páng Juān (龐涓), believed that the Qi soldiers were defecting and decided to attack, with disastrous results.

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<sup>8</sup> 史記·列傳·孫子吳起列傳·3.

<sup>9</sup> The character 燈 (dēng) means *"beacon"*, but in this context it could also be translated as *"campfire"*. The rendering *"a hundred thousand campfires"* would imply more than 100.000 men.

## 2. Practical problems about numbers

In the aforementioned stratagem of Sun Bin, the total number of torches required for the operation would be the vast quantity of one hundred and eighty thousand torches —let alone if the attackers lit campfires instead of torches. It is evident that this number might possess a more cultural and less historical value. The question of the accuracy of numbers and quantities in historiography remains open —perhaps the most prominent example in the West is Herodotus. China has its own exaggerated numbers: “*Master Wu*” speaks of the Wu Hou (武侯 wǔ hóu) defeating half a million Qin state soldiers.<sup>10</sup>

Since it has already been adequately demonstrated that Sunzi’s numbers are not exclusively empirical, one could see an army of such size more as a theoretical notion or even as a literary device rather than as a fully functional force. One could even speculate that such numbers and quantities are sometimes used to underline the effectiveness of Sunzi’s teaching. After all, the strategist also underlined that “*fighting the many is just like fighting the few*”.<sup>11</sup>

### 2.1. Grammar affects perception of distance?

Just like various Greek cities ascribed a different value to the *stadion*, or just like the length of the British *foot* varied according to various norms, the Chinese states created their own Babel of lengths and weights. As Sima Qian informs us, this confusion ended with the unification of China under Qin Shǐhuáng (秦始皇);<sup>12</sup> yet during the time that the “*Art of War*” was created, this era still lay in the distant future. Consequently, when Sunzi refers to “*lǐ*” (里) as a unit of distance, there is always the classical problem of how long a *lǐ* might have been —this article does not elaborate on this. Yet the translation of distance-related phrases in Sunzi’s work poses additional problems.

Sunzi said: “*Thus, knowing the terrain and the timing of the battle, you can assemble forces from a thousand lǐ away in order to fight. If you have no knowledge of terrain and time, then neither is your left flank capable of aiding the right, nor is the right flank capable of aiding the left. Equally, your vanguard is unable to aid the rearguard, and vice versa —let alone if ‘distance’ numbers ten lǐ and ‘vicinity’ just a*

<sup>10</sup> 吳子·勵士·5.

<sup>11</sup> 孫子兵法·兵勢·1.

<sup>12</sup> 史記·秦始皇本紀·15

*few li.*"<sup>13</sup> Yet what does "vicinity" mean? When is actually a detachment capable of receiving aid, and when is it cut off? Now the discussion rotates around the rendering of the phrase "ten li". One would observe that it would be strikingly impractical to refer to anything below ten li as "close" and anything above ten li, i.e. from eleven li to the whole known world, as "far"; one would not expect such a coarse, impractical categorization by a strategist of Sunzi's calibre. Due to this reasoning, one might look for a reading that makes "far" and "close" more distinct; thus, a more accurate rendering would be "'distance' means some tens of li, and 'vicinity' means a few li." (而况远者数十里, 近者数里乎 ér kuàng yuǎn zhě shù shí lǐ, jìn zhě shù lǐ hū).

While readings of this kind might seem more plausible, rendering "tens" instead of "ten" is not free of grammatical challenges. In classical Chinese, the character 十 (shí) is usually used literally as "ten" –and the character used in the text is exactly this. Thus, reading "tens" does not seem to be a well-established choice. Yet, as Dobson (1959, 169) observed, "in fractions and multiples, the signs (...) 什 for 十, are sometimes used for the denominator or the multiple." One characteristic raising some suspicion about the use of 什 is that it does not appear anywhere in the text that Giles translated. Then how can the freedom of rendering "tens of li" be justified? The answer lies in the words used for approximation. When approximation is intended, words such as "more than" (餘 yú) or "approximately" (將 jiāng)<sup>14</sup> appear in the immediate environment. Quite remarkably, before the phrase "ten li" there is also the character 數; pronounced with a third tone (shǔ), it can be a verb and mean "count" –thus the phrase is to be rendered as "let alone if 'distance' numbers ten li"; yet pronounced with a fourth tone (shù), the character means "several" –thus the rendering becomes "let alone if 'distance' [is] some tens of li". Although shí (十) denotes strictly ten, one would say that the author of the "Art of War" is trying to point out that "ten" here does not function as a numeral but rather as a noun, able to be modified and be used in plural like the dozens or hundreds –another peculiarity of numbers in military texts. Depending on how one chooses to translate the aforementioned phrase, the reader can be misled about the distances traversed by armies in that era, or about Sunzi's knowledge of warfare itself.

<sup>13</sup> 虛實 • 5.

<sup>14</sup> See Pulleyblank (1995, 58): "Note the use of jiāng 將 with numerical expressions in the sense of 'approximately'".

The reading of numbers brings further complications, extending even to the translation of whole chapter titles. If one accepts that Sunzi spoke of relatively long distances, this might also imply that he envisioned detachments being anywhere between ten and ninety nine *lǐ* apart and yet still able to aid each other—in other words, this thesis might refer to a gap between flanks. This, in turn, transforms the title which Lionel Giles (1910, 19) rendered as *“Weak points and strong”* (虛實 *xū shí*) to *“True and fake”* or, even more technically, *“Gaps and solidness”*. Gaps between flanks (or the faking of them) have historically caused military disasters even for the best-equipped armies; thus, such an interpretation of the numbers provided by Sunzi can be supported by other related teachings of this chapter, such as the advice to take advantage of gaps: *“The one who can march for thousands of lǐ without getting strained, is the one who marches in an empty place”*.<sup>15</sup>

Although pragmatics and historical context are not the remedy for every malady, they could be quite helpful when it comes to inherently ambiguous terms. For instance, in the chapter *“Employing spies”*,<sup>16</sup> Sunzi comments: *“In order to raise a force of one hundred thousand men and go into a campaign of one thousand lǐ, the expenses of the commoners and the payments of the state shall amount to a thousand gold pieces daily...”*

Once again, one wonders how far *“a thousand lǐ”* are. In the Spring and Autumn period, in which China was partitioned into numerous small states developing around a single capital, the phrase *“a thousand lǐ”* could indeed have been literal: in a chapter titled *“Regulations for the Royals”*, the *“Book of Rites”* holds that, at a certain point of Zhou dynasty, the *Son of Heaven* (天子 *tiān zǐ*) himself had a territory of only one thousand (square) *lǐ*; simultaneously, a marquis would be enfeoffed with one hundred<sup>17</sup>—thus the throne intended to impose limits on the territorial and financial growth of feudal lords. Elsewhere it is stated that around thirty states of one hundred *lǐ* existed, while the rest were a pleiad of statelets, with the total number amounting to 1773.<sup>18</sup> Consequently, through the course of a single campaign, soldiers could march and manoeuvre around five hundred kilometers (310 miles) in order to complete their objective.<sup>19</sup> However, many of these size relations have been discredited by historical experience, since

<sup>15</sup> 孫子兵法·虛實·2.

<sup>16</sup> 用間·1

<sup>17</sup> 禮記·王製·2

<sup>18</sup> 禮記·王製·6

<sup>19</sup> The *lǐ* as a unit of length could vary according to state and era. Here it is conventionally accepted that one *lǐ* equals 500m (~547 yards)

the feudal lords' lands ultimately overshadowed the power of the Zhou. Furthermore, modern scholars such as Robin S. Yates (1988, 218) have expressed skepticism: *"according to the Sun-Tzu, the size of the fields and the taxation system varies in each of the lines' territory, and we may safely say, therefore, that the famous well-field system (ching-t'ien 井田) of land organization (...) was not, in fact, anywhere near as widespread as previously thought."* Numerous are the theses in traditional sources that imply this, but the following text from the book of *"Mencius"*<sup>20</sup> is illuminative: *"After the Xia, during the flourishing of Yin and Zhou dynasties, the (whole) territory did not exceed one thousand li. But nowadays, just the state of Qi has this size."*

This gradual emergence of larger states developing around more than one urban centres, and consequently spanning over vast territories, challenged the meaning of the phrase *"thousand li"*. In many texts of the Warring States period, this phrase seems to possess a metaphorical meaning. For example, Laozi has also used the expression in the famous maxim *"The journey of a thousand li commences with the first step"* (chapter 64). Basing on the spirit of this teaching, one could render *"the longest journey"*, which ascribes to the phrase *"a thousand li"* a figurative meaning. Once again, *"Mengzi"* uses this phrase to denote *"far away"*: *"A complacent voice and appearance can keep people one thousand li away."*<sup>21</sup> Sunzi sometimes uses the number *"one thousand"* to create some literary exaggerations; for instance he uses this number to denote extreme deepness: <sup>22</sup> *"The victorious army is like accumulated water running down a canyon one thousand fathoms deep"*; and then, in a very dialectical manner, he uses the same number to denote extreme altitude: *"Thus, the energy of the ones who fight with competence is like rolling round stones down a mountain one thousand fathoms high"*.<sup>23</sup>

It is thus to infer that the number *"one thousand"*, unlike *"ten"*, might not present the singular-plural ambiguity, but it does present rich connotations which span beyond its arithmetic value and touch literary history and even phraseology. Thus, with the beginning of the Warring States period as a point of reference, it may be more appropriate to render Sunzi's phrase more freely: *"march thousands of li"*.

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<sup>20</sup> 孟子·公孫丑上·1.

<sup>21</sup> 孟子·告子下·33.

<sup>22</sup> 孫子兵法·軍形·5.

<sup>23</sup> 孫子兵法·兵勢·5.

## 2.2. Problems on sums and quantities

Almost all philosophers of that time warned of the economic aftermath of wars. “Wherever an army sets foot, thorns and brambles germinate. And after a great war, there shall certainly come ominous years”, warns Laozi in the *Daode Jing*.<sup>24</sup> “Mòzi” (墨子), the philosophical treatise bearing the name of the founder of Mohism, also dedicates three whole chapters to “Non-aggression”.<sup>25</sup> Sunzi is very peculiar; most scenarios and tactical considerations in the work focus on offensive rather than defensive warfare: going on campaigns instead of barricading, (not) attacking cities instead of fortifying one’s own, etc. Yet Sunzi also warns of the dangers of aggressive war:

*Therefore, if one has not gained profound knowledge of the harm that weapons bring, he cannot know profoundly the benefits that derive from their usage either. The one who uses weapons virtuously (proficiently) never goes on a campaign again and never dispatches provisions thrice. He brings the essentials from his state, but feeds on the enemy’s provisions; thus the aliments of the army suffice. Long-range operations bankrupt the state; it is because of these long-range dispatches that the common people go poor. Short-range operations provoke the prices to soar in the area around; it is because of these high prices that the wealth of the common people is exhausted, and consequently extraordinary taxes are imposed hastily. When all courage is exhausted and all wealth drained, the central areas (of the state) become devoid of houses. The loss of the common people amounts to seven tenths; while the loss of the public sector —for broken chariots and dead horses, for body armors, arrows and bows, polearms, shields and protective mantles, for oxen strained to death and large wagons— all these amount to six tenths.*<sup>26</sup>

In such cases, the morphology of the Chinese language is not the sole problem. One further problem is what one would call “hidden numbers”. For instance, the “*Art of War*” holds that “*The one who uses weapons virtuously (proficiently) never goes on a campaign again*”. The character used for *again* is 再 (zài), yet one could observe that the intended meaning is that he “*never goes on a campaign for a second time*”.

<sup>24</sup> Chapter 30.

<sup>25</sup> 非攻上、非攻中 & 非攻下.

<sup>26</sup> 孫子兵法・作戰・3.

After all, the juxtaposition with the phrase “*he never dispatches provisions thrice*” aids this reading. One could retort that “*again*” does not necessarily mean “*twice*”, but rather “*repetitively*” –although this contradicts current grammar descriptions, such as Dobson’s (1959, 168). Yet other strategists’ works also stress the dangers of doing some things twice. Such an example is “*Six secret teachings*” and the chapter entitled “*Speaking of the general*”:<sup>27</sup> “*An army can neither win twice, nor lose twice. Suppose that the army passes the furthest borders of the state; in case its operations are not restricted within ten days, even if the state does not get utterly destroyed, the army will surely be annihilated and its general slain.*”

Another peculiarity comes from the phrases “*seven tenths*” and “*six tenths*”. Literally read, the syntactical structure employed by Sunzi is “*ten loses its seven / six*” (十去其七 *shí qù qí qī* and 十去其六 *shí qù qí liù*), which makes quite clear the intended quantity –or so one would say before reading Giles’ translation. In his monumental translation, Giles (1910, 6) introduced a great difference because he rendered not “*seven tenths*”, but “*three tenths*” instead, and so he does for the phrase “*six tenths*”, which he renders as “*four tenths*” (*ibid.*, 7). It is now obvious that this phrase is ambiguous: does the result of the subtraction stand for the amount of loss, or for the amount of wealth that the people and the state shall be left with after the calamity?

There is nothing wrong with either of the two renderings, but the reasoning is different. Giles follows strictly the arithmetic procedure: he subtracts seven or six from ten, and reasons that the outcome is the total amount of losses –three tenths for the commoners and four tenths for the state, respectively. His reasoning is respected, but it could benefit from further examination: what do the subtracted values stand for? This reading does not aid the reader in understanding the reason why the subtracted values are six and seven and not, for instance, five or four. Moreover, the rather modest outcome does not necessarily describe the losses of an economy ravaged by war: a thirty percent loss of family wealth describes a severe economic crisis, but not an economic annihilation of a household. Equally, a forty percent loss of public revenue might suggest bankruptcy, but not necessarily the dissolution of a state –which is one of Sunzi’s warnings already from the first verse of his work.

Yet, there is another reading, which does not require subtraction in order to come to an outcome which is not stated in the text, but rather read directly: for every ten units of wealth, common people lose seven, and the state loses six. Based

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<sup>27</sup> 六韜·論將·2.

on Sunzi's cautious, even pacifist, spirit and his warnings of the evils of war, one might suspect that the intended quantities of loss might indeed be larger. In the same array, Sunzi spoke of the *central plains of the state being devoid of houses* (中原内虚于家 zhōng yuán nèi xū yú jiā) —in other words, he warned against desertification. Thus, seventy or sixty percent of loss seems to be much closer to the image of calamity Sunzi intended to illustrate. Samuel Griffith (1963, 74) opts for the worst-case scenario too, even though he misread the rest of the sentence.<sup>28</sup> Perhaps Griffith was not aware that his reading of 'seven-tenths' is backed by some traditional sources on Sunzi, such as the interpretation of Cao Cao,<sup>29 - 30</sup> who commented that "*When the common peoples' wealth is dissipated but the army is still not dismissed, dispatching aliments in the open plains strains all strength. 'Seven tenths' equals to 'utter dissipation.'*"

Regardless of whether one opts for Giles' or Cao Cao's understanding, this ambiguity of numbers sparks further discussions for the interpreter. What is the cost of a war, and what deposits or reserves should one have for a protracted war? A leader preparing wrongfully according to Giles' interpretation might find themselves empty of deposits and reserves amidst conflict; again, overestimating the costs to sixty or seventy percent of the domestic economy might result in preliminary over-taxation and impoverish the citizens even before the war breaks out.

### 3. Sunzi's numbers and their cultural significance

#### 3.1. Lists or magical numbers?

Numerous battles were (almost) lost because of superstition: in the battle of Gaugamela (331 BC), a lunar eclipse was interpreted as auspicious omen for Alexander the great;<sup>31</sup> on the contrary, the lunar eclipse in the battle of Pydna (June 168 BC) terrified many. During the First Punic War, just before the battle of Drepana (249 BC), Roman clairvoyants attempted to infer an omen observing some chickens eating. The animals refused to eat, which was considered an inauspicious omen. The fleet commander Publius Claudius Pulcher was infuriated. He said "*If*

<sup>28</sup> Instead of giving the image of the central plains being devoid of houses, Griffith rendered rather freely that "*...the households in the central plains will be utterly impoverished...*".

<sup>29</sup> Cáo Cāo (曹操, 155 – 220 AD) was an important Chinese statesman.

<sup>30</sup> 十一家注孫子一 • 12.

<sup>31</sup> Arrian, *Anabasis of Alexander*, book 3.

*you won't eat, then drink instead*" (Bagnall 2008, 29 – 30) and threw the cages with the chicken in the sea. These are probably the most famous examples to prove how close the connection of war to metaphysics or superstition is –and how harmful such practices can be for an army.

Ancient China had its own magical superstitions, too. The *"Book of Rites"* records an ancient superstition: if one goes to battle without consulting the oracle bones, disaster and inexplicable deaths shall fall upon the army, while the untimely lost soldiers shall become vengeful ghosts –this is why the dead would be renamed with a posthumous name.<sup>32</sup> In Sunzi's times, superstitions, religious rituals and the like were not rare either. Sunzi's view of metaphysics is rather critical, at least when it comes to the superstitions that develop among soldiers: *"Prohibit the taking of omens, and do away with superstitious doubts"*<sup>33</sup> renders Giles (1910, 49). It is evident that one could not be justified to expect that the *"Art of War"* would be free of a metaphysical spirit. Besides, Sunzi's work, although critical of superstitions, does not lack metaphysical connections: the beginning of the work states five key factors for victory, the most important of which is Laozi's obscure term, the *Way* (道 dào).<sup>34</sup>

Thus, there are instances in which Sunzi's use of numbers is paired with many questions. Number five is one of them. At first glance, five is nothing but a basic number in the *"formal basis of the number system"*, which is decimal (Dobson 1959, 168) –thus Sunzi speaks of squads of five (伍 wǔ) without any numerological intention. Furthermore, this number appears in some lists, such as the five factors governing warfare (五事 wǔ shì)<sup>35</sup> or the *five changes of fire* (火變 huǒ biàn).<sup>36</sup> Up to this point, one would say that this number serves solely a practical purpose.

Yet the chapter *"Employing Spies"*<sup>37</sup> contains a surprise. In the ancient strategist's lists, the five kinds of spies are: *spies within one's province* (鄉間 xiāng jiān), *inner spies* (內間 nèi jiān), *defecting spies* (反間 fǎn jiān), *dispensable spies* (死間 sǐ jiān) and, finally, *spies who shall live* (生間 shēng jiān). Quite paradoxically, at least two of the aforementioned spy types can be combined with each other: a spy within one's province might also be a dispensable one, etc. If one wanted to

<sup>32</sup> 禮記·檀弓上·17.

<sup>33</sup> 孫子兵法·九地·3.

<sup>34</sup> 兵法·始計·2.

<sup>35</sup> 兵法·始計·2. The *Way* (道 dào), *Heaven* (天 tiān, weather conditions), *Earth* (地 dì, terrain), the *general* (將 jiāng) and, finally, the *dogma* (法 fǎ).

<sup>36</sup> 兵法·火攻·2. The *five changes of fire* are five scenarios about the use of arson in warfare.

<sup>37</sup> 兵法·用間·2.

speak of a list of things in the narrow sense, then the terms constituting it should not be compatible —yet here they are overlapping. This might suggest that number “five” here is not the result of spontaneous counting but rather a cultural element.

This raises the suspicion that five might possess a deeper, cultural or even ritual meaning. A literary theme from the *“Art of War”* illustrates five as the number of eternal change: *“As a rule in battles, engagement follows direct tactics, but victory derives from the indirect ones. Therefore, whoever comes up proficiently with indirect tactics is boundless like the Heaven and the Earth; endless like streams and rivers; he ends and then starts again like the sun and the moon; he dies but then is born again, like the four seasons. The musical notes are no more than five, and yet one cannot ever hear all their possible combinations; the basic colours are no more than five, and yet one cannot ever see all their possible mixtures; the flavors are no more than five, and yet one cannot ever savour all their possible blends. The operation of battling is nothing more than two kinds of tactics: direct and indirect; and yet the alternations of direct and indirect cannot ever be strained. Direct and indirect give birth to each other. It is like moving within a circle: who could ever find an end?”*<sup>38</sup> In the examples drawn with “five”, it is obvious that this number stands for eternal change and inexhaustibility.

Despite any practical nature in the aforementioned array, Sunzi’s listing of five notes, tastes and colours presents a striking similarity to the twelfth chapter of Laozi’s *“Daode Jing”* —even though the order of appearance differs. Laozi also taught that: *“The five colours make the eyes of the humans blind. The five notes make the ears of the humans deaf. The five tastes make the mouth of the people unable to taste.”*<sup>39</sup> This Daoist parallel adds another connotation to Sunzi’s number five, i.e. the idea of deception. If, as Sunzi noted elsewhere, *“War is the Art of Deception”*,<sup>40</sup> then perhaps the alternation of direct and indirect tactics might blind the opponent just like the five colours do...

Nine is another enigma; only the lists of the *“nine types of ground”* (九地 jiǔ dì) and the *“nine tactical changes”* (九變 jiǔ biàn) include this number. While these chapter titles might sound technical, one should not be too hasty to assume that they solely describe quantities. A closer look to the nine types of ground might reveal more: *“scattering ground”* (散地 sàn dì), *light (easy) ground* (輕地 qīng dì), *competitive ground* (爭地 zhēng dì), *open ground* (交地 jiāo dì), *crossroad ground* (衢地 qú dì), *heavy (difficult or serious) ground* (重地 zhòng dì), *ruin-scattered*

<sup>38</sup> 兵法 • 兵勢 • 2.

<sup>39</sup> Chapter 12.

<sup>40</sup> 兵法 • 始計 • 2.

*ground* (圮地 pǐ dì), *surrounded ground* (圍地 wéi dì) and *deadly ground* (死地 sǐ dì).” Once again, the elements of this list are overlapping.

Nine, being the last of the digits, symbolised the highest grade of something. In the “*Book of Documents*”<sup>41</sup> as well as in other sources of paramount importance, one way to refer to the entirety of a state is “*the nine continents*” (九州 jiǔ zhōu) or, as Dorofeeva-Lichtmann (2010, 17) renders, “*nine provinces*” —a term resounding the myth of the emergence of “*nine territories*” after the great flood (Wong 2015, 7), rather than being an actual administrative tool. Again, the only time Laozi used this number in his verses, was in order to point out extreme height: “*The building of a nine-storey tower starts with the first heap of soil*”.<sup>42</sup> More specifically, nine symbolizes the ultimate yang (太陽 tài yáng), i.e. notions like “*high*”, “*warm*”, “*dry*” etc. —and, as Sunzi put it, “*armies cherish what is high and despise what is low*”, and he follows up by suggesting to “*hold yang in esteem and be repulsed by yin*”.<sup>43</sup> It is perhaps not a coincidence that Sunzi holds the ninth and final position of his list for the “*deadly ground*” (死地 sǐ dì): the ground in which victory for either side can be secured —“*if you tread on deadly ground, you are obliged to fight*”, he warns in chapter “*nine tactical changes*”.<sup>44</sup> A teaching of the *Book of Changes*, also entitled “*I Ching*”,<sup>45</sup> illustrates the fine line that separates triumph from demise and, interestingly, it is the interpretation of the “*top ninth*” (上九 shàng jiǔ) line of the first hexagram (乾 qián): “*The dragon exceeded the limits. There shall be repentance.*”

### 3.2. Cultural connotation of “one hundred”

The number “*one hundred*” might be the most complex number in the whole “*Art of War*”. In an arithmetic system based on tenths and not dozens, this number plays a rather significant role. One would expect it to be the standard criterion for sizes of detachments or any related quantities. Yet, surprisingly, this is not the case in Sunzi’s “*Art of War*”. Overall, it appears ten times in the text, and it is interesting that it almost never possesses a literal, arithmetical meaning —and, even if it does,

<sup>41</sup>尚書 (shàng shū).

<sup>42</sup> Consequently, the phrase “*nine-storey*” can also be translated as *the tallest*”, in juxtaposition to the next –famous– verse that holds “*The journey of a thousand li starts with the first step*”, which again is translated as “*the longest journey...*”. All these show that nine is used instead of a superlative.

<sup>43</sup>兵法 • 行軍 • 2.

<sup>44</sup>兵法 • 九變 • 1.

<sup>45</sup>易經 (yì jīng).

it usually conveys some kind of numerological spirit. Firstly, it is a linguistic component in words and phrases such as *“the hundred common names”* (百姓 bǎi xìng) –the term for all the family names of a state, i.e. the common people. Apart from this crystallised, idiomatic use of this number, Sunzi uses it freely to mean *“all”*. He teaches that *“If you know both your opponent and your own self, you cannot be destroyed in one hundred battles”*.<sup>46</sup>

Again, there is an interesting use of this number in a chapter entitled *“Attacks based on stratagems”*.<sup>47</sup> *“As a rule in the usage of arms, to conquer a state intact is optimal; to destroy it is not as good; to capture a whole battalion intact is optimal; to exterminate it is not as good”*; Sunzi continues this reasoning with symmetrical phrases and teaches the same priorities for a company and a squad of five, and, finally, comments: *“Thus, to fight one hundred battles and win one hundred battles is a virtueless virtue; to force your opponent to surrender his weapons without a fight, is the virtue of virtues.”* In the aforementioned teaching, the phrase *“fight one hundred battles and win one hundred battles”* (百戰百勝 bǎi zhàn bǎi shèng) could also be rendered *“fight one hundred battles and win them all.”* It is evident here that this number is not used literally: such a skilled tactician would still be safe after the hundredth battle too. Yet it is much more interesting that the first use of the number is idiomatic, too. To *“fight a hundred battles”* is again a metaphor for *“many”*. Lastly, Sunzi uses an even more interesting syntactical structure: by negating the number *“one hundred”* (*“all”*), he creates the idea of *“none”*: *“As a rule, armies cherish what is high and despise what is low; if you hold yang in esteem and be repulsed by yin, if you take care of health conditions and camp on solid ground, then the army will not suffer one hundred [any] diseases. Thus, you shall necessarily be victorious.”*<sup>48</sup>

#### 4. Final observations

Sunzi’s *“Art of War”* is replete with numerical references, yet not all of them are intended as empirical measurements. Some signify literal quantities, while others carry a cultural and numerological significance, and still others form part of a theoretical framework describing armies or states on a broader scale. Sunzi’s work often challenges conventional grammatical usage, blending terminology with

<sup>46</sup> 兵法 • 謀攻 • 6

<sup>47</sup> 孫子 • 謀攻 • 1

<sup>48</sup> 孫子 • 行軍 • 2.

cultural, philosophical, or even personal impressions. This fusion creates highly idiosyncratic passages, resisting straightforward analogies with other texts and presenting remarkable challenges for translation.

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