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Graphic differentiation.
An inquiry into the formation of Chinese characters and the role of derived graphs –
With examples from Confucius' Analects

1.   The six principles of Chinese script

When explaining the structure of Chinese characters, scholars have traditionally referred to the six principles of writing (*liùshū* 六書). The *liùshū* theory divides Chinese characters into six categories: pictographs, indicators, picto-phonetic characters, associated compounds, changing and adding graphs and loan graphs.

Historically, the first mention of the *liùshū* occurs in the *Dìguān* chapter of the *Zhōulǐ* (周禮), the "Rites of the Zhou", a book about administrative organisation of the *Zhōu* dynasty.[2] The following translated excerpt describes the duties of a state official named "Protector". The Protector was, amongst other duties, responsible for education of the princes and the sons of the nobles and for instructing them in the "six arts" (*liù yì* 六藝):

> The Protector is responsible for admonishing the king for any evildoing. He raises the sons of the state using the *Way* and teaches the six arts: The first is called the five rites, the second the six forms of music, the third the five techniques of archery, the forth the five techniques of driving a carriage, the fifth the six principles of writing, and the sixth is called the nine calculations of numbers.[3]

The *Zhōulǐ* does neither explain the six arts nor the six principles of writing in detail.

The second oldest source in Chinese literature mentioning the six principles of writing is the "Book of Han", the second of China's 24 dynastic histories (also referred to as the "History of the Former Han") written by *Bān Gù* (班固, 32-92 A.D.), a poet, historian and

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[2] The book *Zhōulǐ* 周禮 "Rites of the Zhou" was originally known as the "Officers of Zhou" (*Zhōuguān* 周官*).* The author of the book is unknown, but traditionally the scholar, librarian, astronomer and politician *Liú Xīn* 劉歆 (ca. 50 B.C. - 23 A.D.) is named as the first editor. The book likely dates back to the Warring States period, but not to the *Zhōu* dynasty. For the textual history see William G. Boltz: Chou li 周禮, in: Loewe, Michael (ed.): Early Chinese Texts – A Bibliographical Guide, Berkeley 1993, p. 24-32, here p. 24.

[3] All English translations in this article are own translations of the authors. The English translation of the *Zhōulǐ* quotation is based on the following Chinese text: Zhōulǐ Zhùshū 周禮註疏, *(Qīng) Ruǎnyuán Jiàokè* (清) 阮元校刻, *Shísānjīng Zhùshū* 十三經註疏, *Běijīng* 1980, p. 731.

Eastern Han court official. In the *Yìwénzhì* chapter of the Book of Han we read the following description of the six principles of writing:

> When the ancients reached the age of eight years they entered primary studies. Therefore, a *Zhōu* official, the Protector, was responsible of raising the scions of the state, and taught them the six principles of writing. They are named *xiàngxíng* "resembling form", *xiàngshì* "resembling things", *xiàngyì* "resembling meaning", *xiàngshēng* "resembling sound", *zhuǎnzhù* "changing and adding", and *jiǎjiè* "borrowing". They are the bases of forming characters.[4]

The most important ancient Chinese book dealing with the structure and formation of characters is the *Shuōwén Jiězì* ("Speaking of writing, explaining characters"). The *Shuōwén Jiězì* is the first Chinese dictionary systematically analysing the structure of Chinese characters and grouping the dictionary entries for 9.353 characters by 540 shared semantic components (*bùshǒu* 部首 "section headers" often referred to as "radicals"). The composition of the dictionary was approximately completed 100 A.D. by the Han dynasty scholar Xǔ Shèn and published 121 A.D. The *Shuōwén Jiězì* standardised Chinese script and promoted the study of Confucian classics in imperial China. It is a major historical source for any study of Chinese characters.

The postface of the *Shuōwén Jiězì* explains the six principles of writing as follows:

周禮八歲入小學，保氏教國子先以六書。一曰指事。指事者，視而可識，察而見意，上、下是也。二曰象形。象形者，畫成其物，隨體詰詘，日、月是也。三曰形聲。形聲者，以事為名，取譬相成，江、河是也。四曰會意。會意者，比類合誼，以見指撝，武、信是也。五曰轉注。轉注者，建類一首，同意相受，考、老是也。六曰假借。假借者，本無其事，依聲託事，令、長是也。[5]

According to the ritual system of the *Zhōu* dynasty, at the age of six one enters primary studies. The Protector instructed the sons of the state by first teaching them the six principles of writing. The first is called *zhǐshì* "indicating things". Regarding graphs indicating things, when seen, they can be understood; when examined, their meaning becomes apparent. The graphs *shàng* 上 ("above") and *xià* 下 ("below") are such. The second is called *xiàngxíng* "resembling form". As for these pictographs one draws a picture of an object, following its physical form by bending the lines accordingly. The graphs *rì* 日 ("sun") and *yuè* 月 ("moon") are such. The third is called *xíngshēng* "form and sound". Concerning these picto-phonetic characters, one takes one component as the semantic part and then combines it with a phonetic part sharing the same sound. The graphs *jiāng* 江 ("great river") and *hé* 河 ("river") are such. The fourth is called *huìyì* "associated meanings". Regarding associative compound graphs, one puts together two graphs and combines their meaning to show the signified. The graphs *wǔ* 武 ("martial") and *xìn* 信 ("trust") are such. The fifth is called *zhuǎnzhù* "changing and adding". As for these changing and adding graphs one establishes a character as the radical and adds it to characters sharing the same meaning. The graphs *kǎo* 考 ("examination") and *lǎo* 老 ("old") are such. The sixth is called *jiǎjiè* "borrowing". As regards such loan graphs originally there is no such graph. Based on the sound one

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[4] (Hàn) Bān Gù (漢)班固: *(Táng) Yánshīgǔ Zhù* (唐)顏師古注, *Hànshū* 漢書, *Běijīng* 1962, p. 1720.

[5] (Dōnghàn) Xǔ Shèn (東漢) 許慎: *Shuōwén Jiězì* 說文解字, *Běijīng* 1963, p. 316.

entrusts another graph. The graphs *lìng* 令 ("to govern") and *zhǎng* 長 ("to govern") are such.

Below we will trace the development of these six types of Chinese characters historically. In order to sense the spirit of the six principles of Chinese script we have to imagine a world without alphabet in which scribes regularly faced the challenge of inventing new or modifying existing characters to write precisely and disambiguate script.

The oldest and most archaic way to write without an alphabet is creating a graph by drawing an image of the thing to be represented. These so-called pictographs resemble the shape of the thing. Their Chinese name is therefore called *xiàngxíng* "resembling form". Differently from western alphabets, pictographs do not provide any information on their pronunciation.

oracle bone script (ca. 1300-1045 B.C.)	[6]	[7]	[8]	[9]
regular script	*mù* 目 "eye"	*shé* 它 (蛇) "snake"	*yú* 魚 "fish"	*shān* 山 "mountain"

Figure 1: Pictographs.

A part of a whole thing can be depicted by an image of the whole thing on which the respective part is marked by a dot, line, or an arc. This class of Chinese characters is called indicators (*zhǐshì* 指事 "indicating things") because in an image of a whole thing there is a mark pointing at a certain part. Indicators are pictographs with a small marker. Below are examples for indicators from the oracle script.

oracle bone script (ca. 1300-1045 B.C.)	[10]	[11]	[12]	[13]
regular script	*gōng* 厷 "arm"	*rèn* 刃 "blade (of a knife)"	*yì* 亦 "armpit"	*xī* 膝 "knee"

Figure 2: Indicators.

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[6] Institute of History, Chinese Academy of Social Sciences 中國社會科學院歷史研究所 (ed.): *Jiǎgǔwén Héjí* 甲骨文合集 (Great Collection of the Oracle-Bone Inscriptions), *Běijīng* 1978-1982, No. 6194.

[7] Great Collection of Oracle-Bone Inscriptions, No. 10062.

[8] Great Collection of Oracle-Bone Inscriptions, No. 10490.

[9] Great Collection of Oracle-Bone Inscriptions, No. 90.

[10] Great Collection of Oracle-Bone Inscriptions, No. 1772.

[11] Great Collection of Oracle-Bone Inscriptions, No. 5837.

[12] Great Collection of Oracle-Bone Inscriptions, No. 16013.

[13] Great Collection of Oracle-Bone Inscriptions, No. 13670.

Complex things, abstract meanings or verbs cannot be expressed by a simple image. Chinese scribes therefore also used the principle of *huìyì* "associated meanings" to create new graphs. We call this kind of Chinese character "associated compounds". This means that a Chinese character is formed by two (or more) graphs combined in one compound. The different meanings of the combined graphs are connected and thus create a new meaning. Associated graphs allude to associative meanings. For example, in oracle script the graph *xiū* 休 "to rest" is composed of the parts *rén* 人 "person" and *mù* 木 "tree". This means that a person rests under a tree. The associated meanings also help memorising the characters. More examples: The compound *mù* 牧 "to pasture (cattle, sheep, etc.)" is a combination of *niú* 牛 "cattle" and *pū* 攵 resembling "a whip in a hand": A cowboy takes a whip in his hand to push cattle ahead. This stands for the meaning "to pasture". The character *shè* 涉 "to wade" is an associative compound consisting of the elements *bù* 步 "step" plus *shuǐ* 水 "water" resulting in the associated meaning "to wade through a river". The Chinese character *chéng* 丞 "to rescue" is an associative combination of *kǎn* 凵 "pit, hole" with a *rén* 人 "person" trapped in the pit. Above the person in the pit are two helping hands (又 "hand") which pull out the person from the pit. This combination of three graphs creates the connotation "to rescue". It is noteworthy that this kind of combined graphs is purely visual, but without any sound-bearing (phonophore) element representing the pronunciation of the word.

oracle bone script (ca. 1300-1045 B.C.)	14	15	16	17
regular script	*xiū* 休 person + tree = "to rest"	*mù* 牧 "cattle" + "whip in a hand" = "to pasture"	*shè* 涉 "water" + "step" = "to wade through a river"	*chéng* 丞 "hands" over a "person in a pit" = "to rescue"

Figure 3: Associated compounds.

The above three methods of forming Chinese characters (pictographs, indicators, associative compounds) and the meanings that can be expressed in this way are still limited. Many words cannot be pictured in this way. For example: How should a specific tree or fish species, different kinds of liquids, or abstract ideas (e. g. time, direction, colour, emotion) be expressed in pictographs or combinations of pictographs? Certain parts of speech (e. g. pronouns, adverbs, particles) are abstract and cannot be depicted by graphs.

To overcome these limitations of a purely graphic representation, Ancient Chinese script has made abundant use of so-called loan characters.[18] The term loan characters

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[14] Great Collection of Oracle-Bone Inscriptions, No. 8155.
[15] Great Collection of Oracle-Bone Inscriptions, No. 493.
[16] Great Collection of Oracle-Bone Inscriptions, No. 32951.
[17] Great Collection of Oracle-Bone Inscriptions, No. 2279.
[18] The Chinese term for writing with loan characters is *jiǎjiè* 假借 "borrowing".

refers to writing a Chinese word by using ("borrowing") an existing character of a totally different and unrelated word with identical or similar pronunciation. For example, in oracle bone script the character *dōng* 東 "sack" is a pictograph resembling a sack with the two ends tied up. In Ancient Chinese, this character is regularly used to write the homophone *dōng* "east". The noun *dōng* "east" has originally no own graph in Chinese script. Therefore, ancient scribes "borrowed" the graph of the homophone *dōng* "sack" to write the direction "east" by phonetical representation. More examples: The character *yì* 亦 "armpit" is an indicator with two small strokes pointing at the armpits of a human body. In Ancient Chinese this graph is used as a loan character to write the homophone conjunction *yì* "too". *Mò* 莫 "sunset" is an associated compound. In oracle bone script the graph comprises the components *cǎo* 艹 "grass" and *rì* 日 "sun" meaning "the sun goes down in the grass". The graph *mò* 莫 is regularly loaned to the homophone *mò* "no one, don't". *Cǎi* 采 is an associated compound: It displays a hand picking a leaf or a fruit and means "to pick something". This graph is a loan graph for the homophone *cǎi* "colour" (today written as 彩).

oracle bone script (ca. 1300-1045 B.C.)	[19]	[20]	[21]	[22]
original meaning	a kind of bag	armpit	sunset (in the grass)	to pick
as loan graph	*dōng* 東 "east"	*yì* 亦 "too"	*mò* 莫 "no one, don't"	*cǎi* 彩 "colour"

Figure 4: Loan graphs.

Loan graphs are used as monosyllabic phonetic symbols. Using other graphs as phonetic symbols avoids the difficulty of forming new characters. Loan graphs are a form of phonetic writing. Excavated documents from the pre-Qin period to Western Han Dynasty feature an extensive use of loan graphs. During this time period loan graphs were used in almost every sentence.

   Another method of forming new Chinese characters is combining phonetic and pictographic (semantic) elements in one picto-phonetic character. The postface of the *Shuōwén Jiězì* cites the graphs *jiāng* 江 "great river" and *hé* 河 "river" as examples. These two characters have 水 "water" (simplified as 氵 in regular script) as a semantic component on their left side plus a phonetic component on the right side. This method of forming new picto-phonetic characters is traditionally called *xíngshēng* 形声 "form and sound". As phonetic component scribes usually used existing graphs sharing the same pronunciation as the word to be written.

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[19] Great Collection of Oracle-Bone Inscriptions, No. 5566.
[20] Great Collection of Oracle-Bone Inscriptions, No. 16013.
[21] Great Collection of Oracle-Bone Inscriptions, No. 29804.
[22] Great Collection of Oracle-Bone Inscriptions, No. 12814.

As for *zhuǎnzhù,* the "changing and adding" graphs mentioned in the postface of the *Shuōwén Jiězì,* there are endless different explanations and disputes between scholars. Mostly *zhuǎnzhù* is understood as a form of usage rather than a principle of forming characters. However, we understand *zhuǎnzhù* "change and addition" as a method of forming Chinese characters by changing and adding semantic components to existing graphs. This is what we explain as graphic differentiation in this article.

2.　　　Graphic differentiation

Below we treat two typical cases of graphical differentiation. The first is the differentiation of monosyllabic homophones. The second scenario is a differentiation of characters in connection with a semantic differentiation.[23] In both cases characters were graphically distinguished to disambiguate graphs carrying a "semantic overload".

Graphic differentiation of homophones

The Chinese language possesses a comparatively limited phonetic and syllabic inventory. Modern standard Chinese only has approximately 400 phonetically different syllables. The precise number of syllables in Ancient Chinese is unknown but likely lies in the same order of magnitude. By comparison, German language has a syllabic inventory of approximately 5.100 and French less than 3.000 syllables. Due to the limited number of phonetically available syllables, Ancient Chinese has a big number of monosyllabic words with identical pronunciation (homophones). Almost for every monosyllabic Chinese word there are several homophones creating potential ambiguity.

On the one hand, using phonetic writing by loan graphs in Ancient Chinese script (which already occurred in oracle bone script in the late Shang dynasty) temporarily avoided the difficulty of inventing new characters. On the other hand, loan graphs lead to ambiguities and "overloaded" characters representing two or even more words.

To avoid ambiguities of multifunctional graphs denoting more than one specific meaning (polysemic graphs), ancient Chinese writers added calligraphic components to loan graphs, thus creating newly formed distinguished characters. For example, the original meaning of the Chinese character *wèi* 胃 is "stomach". In Ancient Chinese script this graph was "borrowed" and used as loan graph to write the homophonic word *wèi* "to speak". In this way the graph *wèi* 胃 became an ambiguous polysemic graph since it could refer either to the noun *wèi* "stomach" or to the verb *wèi* "to speak". To differentiate the latter verb "to speak" in writing, the graphical element 言 "to say, word" was added to *wèi* 胃, resulting in a new combined character *wèi* 謂 "to speak". By this graphic differentiation the lexical load of the character *wèi* 胃 was dispersed and distributed to two different characters (*wèi* 胃 "stomach" and *wèi* 謂 "to speak").

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[23] We only analyse typical models of graphic differentiation without being exhaustive. Historically there are many other reasons why graphs were modified, for example to reflect in writing a change in the pronunciation of the spoken language.

This phenomenon is called graphical differentiation and the newly formed characters are named differentiated graphs.[24] We also call differentiated graphs derived characters[25] if we want to emphasise the derivation of a Chinese character from a matrigraph (example: *wèi* 謂 is derived from its matrigraph *wèi* 胃).

Here are more examples of graphic differentiation: The graph *mǒu* 某 originally stands for a tree species. In Chinese writing this graph was used as a loan graph for the homophonic verb *móu* 謀 "to plan". By adding *yá* 言 "to say, word" to *mǒu* 某 the new graph *móu* 謀 was formed and differentiated.

The character *bì* 辟 primarily refers to "(criminal) law", "crime" or the "monarch" (who has the power to exercise the law and to punish criminals). The Chinese word for "arm" had the same pronunciation and was written with the same graph (used as loan graph). Later the component *ròu* 肉 "meat" was added to differentiate the two homophones.[26] In this manner the new graph *bì* 臂 "arm" was designed.

The character *cǎi* 采 primarily denotes "to pick", but was also used as a loan graph to write the homophonic noun *cǎi* "colour". To avoid the ambiguity of the two homophones the graphical component *shān* 彡 "texture" was added, so that *cǎi* "colour" could be differently written with the new graph *cǎi* 彩.

Original graph (matrigraph) which was "borrowed" to write a monosyllabic homophone	Added semantic component, only generically representing meaning	result of graphic differentiation: a new picto-phonetic character (phonophore + semantophore)
wèi 胃 "stomach", borrowed for the verb wèi "to say"	言 "to say, word"	*wèi* 謂 "to say"
mǒu 某 a tree species, borrowed for the verb móu "to plan"	言 "to say, word"	*móu* 謀 "to plan"
bì 辟 "law, crime, monarch", borrowed for the noun bì "arm"	月 (肉) "meat, body part"	*bì* 臂 "arm"
cǎi 采 "to pick", borrowed for the noun cǎi "colour"	彡 "texture"	*cǎi* 彩 "colour"

Figure 5: Graphic differentiation: New picto-phonetic graphs were formed through adding of semantophores.

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[24] Qiú Xīguī 裘錫圭: *Wénzìxué Gàiyào* 文字學概要, *Běijīng* 1988. Trans. Gilbert L. Mattos and Jerry Norman: Chinese Writing. The Institute of East Asian Studies, Berkeley 2000, p. 321 et seq.) provides a good introduction.

[25] The Chinese term for differentiated or derived characters is *fēnhuàzì* 分化字.

[26] If *ròu* 肉 is used as a semantic component of a character, it often refers to bodily organs and is written as 月 as in *bì* 臂 "arm".

This process of graphic differentiation of homophonic words produced a great amount of picto-phonetic characters. In the newly formed picto-phonetic characters the original graph serves as a phonetic component (phonophore) and the added component functions as a signifier, generically indicating the meaning (semantophore).

Graphic differentiation in connection with semantic changes

The above model of forming new characters by adding semantophores to loan graphs for homophones is only one type of graphical differentiation. In fact, graphical differentiation of Chinese characters by adding graphical components was never limited to homophones and is much more complex. During language history words and their meanings constantly changed. New words and usages occurred. Chinese characters became polysemic and denoted two or more meanings. Graphs were also modified by adding or exchanging semantic components in order to differentiate new meanings in writing. The below models for graphic differentiation are only examples and are not meant to be exhaustive.[27]

Differentiation of opposites

Mǎi 買 "to purchase" and *mài* 賣 "to sell": In oracle bone script 買 was written as 🐚 [28]. This graph can be classified as an associative compound. It shows a bamboo basket loading (or unloading) money (*bèi* 貝). The original meaning of this combination is "barter trade". Any exchange of goods has basically two opposite directions: paying money for incoming goods (purchase) and receiving money in a sale. The original graph did not distinguish the incoming from the outgoing direction. During Qin Dynasty, the component *chū* 出 "to go out" was added to the graph to differentiate the two meanings, thus forming a new character *mài* 賣 exclusively referring to outgoing direction. In this way the verb "to barter" was split up into the opposites *mǎi* 買 "to purchase" and *mài* 賣 "to offer, to sell goods".

   Shòu 受 "to receive" versus *shòu* 授 "to give, to grant": In oracle bone script 受 is written as 𣪊 [29]. The graph depicts a hand passing a *zhōu* 舟 "boat" to another hand. During the Pre-Qin period the character could mean both "to receive" and the opposite "to give". The component *zhōu* 舟 "boat" in the middle of the oracle bone graph can be interpreted as the thing handed over so that the graph would be an associated compound. But the component *zhōu* 舟 can also be understood as representing the pronunciation (*shòu* and *zhōu* are similar in pronounciation) thus forming a picto-phonetic graph.[30] During Han dynasty the component *shǒu* 手 "hand" (in compound graphs written as 扌) was

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[27] Our study of differentiated characters is inspired and owes a great deal to Wáng Níng 王寧: *Hànzì Gòuxíngxué Dǎolùn* 漢字構形學導論, *Běijīng* 2015, p. 172-178.

[28] Great Collection of Oracle-Bone Inscriptions, No. 11436.

[29] Great Collection of Oracle-Bone Inscriptions, No. 30858.

[30] Components of Chinese graphs can be ambiguous and simultaneously function as phonophore and semantophore. The historical formation of Chinese characters can be more complex than our models.

added to the graph *shòu* 受 "to receive" forming a new graphically differentiated character *shòu* 授 for the opposite meaning "to give, to grant".

Differentiating part of speech

Qín 禽 "animal" versus 擒 *qín* "to capture, to catch": In oracle bone script the character *qín* 禽 was written as [31]. It can be explained as a picto-phonetic graph with the top *jīn* 今 representing the pronunciation. The lower part shows a hunting net with a long handle to catch animals. In Ancient Chinese, the character *qín* 禽 can either refer to the verb "to capture" or the noun "wild animal" to be captured. During the Six Dynasties period the verb was graphically separated from the noun by adding the component *shǒu* 手 "hand" (in compound graphs written as 扌), resulting in the new graph *qín* 擒 for the verb "to capture, to catch".[32]

Zuò 坐 "to sit" and *zuò* 座 "seat": During the Warring States period the graph was written as [33]. It is an image of two persons sitting on a mat facing one another. The character could mean both the verb "to sit" or the noun "seat" without graphically differentiating the part of speech. At a later stage a new graph *zuò* 座 was formed for the noun "seat" by adding the element *yǎn* 广 "house".

Differentiation of broad and narrow meanings

Qǔ 取 "to take, to get" and 娶 *qǔ* "to marry (a woman)": In oracle bone inscriptions the character *qǔ* 取 had the form [34]. The picture shows a hand snatching an ear. The historical background is cruel and archaic: The battle achievement of an ancient warrior was measured in the number of ears which he "took" from his enemies. The character is used to broadly denote the verbs "to gain, to acquire, to take, to get" (without referring to war). The graph also denotes "taking a woman (as wife)". The latter meaning was distinguished by adding the component *nǚ* 女 "women". The derived graph for this narrow meaning is *qǔ* 娶 "to marry (a woman)".

[31] Great Collection of Oracle-Bone Inscriptions, No. 9225.

[32] Some scholars hold that the character *qín* 擒 has come into being during Han Dynasty. A different dating of the graphical differentiation to the Six Dynasties is suggested by Chén Qīng 陳青: *Lìlùn Fēnhuàzì Duàndài zài Wénxiàn Yánjiū Zhōng de Yīngyòng Jiàzhí* 例論分化字斷代在文獻研究中的應用價值 (Dynastic Research of Characters Derivation and its Values for Philological Research), in: *Wénxiàn Yǔyánxué* 文獻語言學 7 (2019), p. 179-190, here p. 184.

[33] *Shuìhǔdì Qínmù Zhújiǎn Zhěnglǐ Xiǎozǔ* 睡虎地秦墓竹簡整理小組 (Sorting Group of Bamboo Slips from the Qín Tomb in *Shuìhǔdì*), *Shuìhǔdì Qínmù Zhújiǎn* 睡虎地秦墓竹簡 (Bamboo Slips from the Qín Tomb in *Shuìhǔdì*), *Běijīng* 1990, *Qínlǜshíbāzhǒng* 秦律十八種, No. 80.

[34] Great Collection of Oracle-Bone Inscriptions, No. 6567.

Zhī 支 - *zhī* 枝 "branch" - *zhī* 肢 "limb": In small seal script[35] the character 支 was shaped as 㲋 [36]. The image represents a hand breaking a bamboo branch. The graph primarily stands for such a "branch" of a plant, but in a broader, derived sense it also refers to any branch-like object (e. g. a human limb, or limb of an animal). The graph was split up into three derived characters denoting more specific meanings by adding respective semantic components: *zhī* 支 plus the component *mù* 木 "tree" resulted in the character *zhī* 枝 "branch". *Zhī* 支 plus the component 月 "body parts" formed the character *zhī* 肢 "limb". The combination of *zhī* 支 plus *yǔ* 羽 "feather" produced the compound *chì* 翅 "wing (of a bird)".

Differentiation of original and extended meanings

Dì 弟 "order, sequence; younger brother" and *tì* 悌 "to love and respect one's elder brother". In oracle bone script the character *dì* 弟 was written as 弗 [37]. The graph depicts a rope wound around a pole or weapon. The regular turns of the rope suggest the meaning "order, sequence". The graph also refers to a "younger brother" and "junior family member". The graph has, by semantical extension, come to mean "to behave as a younger brother was supposed to be". This extended meaning was graphically distinguished by adding the component *xīn* 心 "heart", in this manner forming the differentiated graph *tì* 悌 "to love and respect one's elder brother". If the component *xīn* 心 "heart" is appended as a component to the left side of a character it takes the form 忄 and often marks that the meaning of the character is related to "thought, idea, emotions, mental activities, etc.".

Mò 沒 "to sink (into the water)" versus *mò* 歿 "to die": In small seal script *mò* 沒 was shaped as 𣳚 [38]. It is a picto-phonetic graph and its original meaning is "to sink into the water". In this character, "water" is represented by the graphical component 氵 on the left side. Since an object sunk into the water disappears, the graph also denotes the verb "to disappear". This meaning was further extended to the meaning "to die". To distinguish the verb "to die" from the other meanings, the "three points water" 氵 on the left side of *mò* 沒 were replaced by a different semantic component *è* 歹 "remains, corpse". In this way, the graph *mò* 歿 was exclusively formed for the meaning "to die".

The above examples illustrated two different types of graphical differentiation: The first type can be summarized as graphical differentiation of homophones. The second type can be described as a graphical differentiation which follows a change, extension or differentiation of lexical meanings. Based on the above examples we define graphical differentiation of Chinese characters as a historical process during which a polysemic Chinese character representing two homophones or having multiple meanings was modified by adding or changing a graphical component (e. g. 言 "language", 扌 "hand", 氵 "water", 月 "body part") to form new characters. We call the original character matrigraph and

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[35] Small seal script (in Chinese *xiǎo zhuàn* 小篆) is a simplified form of Zhou style calligraphy. The small seal script was adopted approximately 213 B.C. during the Qin Dynasty for the purpose of standardizing the script.
[36] Xǔ Shèn: *Shuōwén Jiězì*, p. 65.
[37] Great Collection of Oracle-Bone Inscriptions, No. 9817.
[38] Xǔ Shèn: *Shuōwén Jiězì*, p. 233.

the newly formed graph differentiated graph (or derived character). The result of graphical differentiation is usually a new picto-phonetic character with a semantic component (semantophore) and a phonetic component (phonophore). The semantic component represents the meaning only in a generic manner (e. g. 扌 "hand" in 擒, 氵 "water" in 沒, 忄 "heart, thought" in 悌) and groups all characters sharing the same semantophore. For example the verbs qín 擒 "to capture, to catch" and zhāo 招 "to gesticulate, to beckon somebody to come" all share the same semantic component 扌 "hand".

The process of adding or exchanging semantic components to Chinese characters shaped the Chinese writing system in a way that, as a result, many characters share the same semantic component. These semantic components (e. g. 扌 "hand" in 擒, 氵 "water" in 沒, 忄 "heart" in 悌) also function as indexing components by which characters are arranged in traditional and modern Chinese dictionaries.

Inspired by the method of adding new or exchanging semantic components of existing graphs ancient scribes also created entirely new characters by combining pictographic (semantic) and phonetic components at once. Scribes usually used an existing graph as a phonetic component sharing the same pronunciation as the word to be written. This method of forming new picto-phonetic characters is traditionally called xíngshēng 形声 "form and sound". Both this "form and sound" method and the zhuǎnzhù "changing and adding" method (i.e. graphic differentiation of existing graphs) resulted in picto-phonetic graphs, but graphic differentiation of existing graphs played a more important role in the history of Chinese characters. Starting from the Warring States period, over 80% of Chinese characters are picto-phonetic graphs.[39]

One remark on the term "radical": The semantic components of picto-phonetic characters (e. g. 扌 in 擒, 氵 in 沒, 忄 in 悌) are usually referred to as "radicals" in English. It needs to be clarified that the semantic components of characters are not necessarily related to the etymological root (radix) or stem of the respective words. As shown in the above examples for derived characters, during the evolution of Chinese script, the semantic components are often distinguishing graphs, which were added to previously existing characters at a later stage. The Chinese words for these semantic components are bùshǒu 部首 "section header" and piānpáng 偏旁 "side part". These terms refer to the graphical structure of characters. In Indo-European languages inflected words are decomposed into radical and termination: The radical carries the meaning, the termination determines number, gender, case, time etc. (for example Latin audi-o). Ancient Chinese is not an inflecting language and uses an entirely different writing system. The allusion to inflected

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[39] According to Huáng Dékuān 黃德寬 during the Warring States period, picto-phonetic graphs accounted for 81.4% of all Chinese characters (Huáng Dékuān 黃德寬: Gǔhànzì Fāzhǎn Lùn 古漢字發展論 (The Evolution of Ancient Chinese Script), Běijīng 2014, p. 439, p. 505-506). During Han Dynasty this number increased to 86.28% in the Shuōwén Jiězì. According to Zōu Mǐnmǐn 鄒敏敏 (Xiàndài Tōngyòng Guīfàn Hànzì Xíngshēngzì Yánjiu 現代通用規範漢字形聲字研究 (The Study of Semantic-phonetic Compound Characters in Modern General Standard Chinese Characters), Shāndōng 2016, p. 21) the share of picto-phonetic graphs amounts to 88.37 % in the latest official standard list for Chinese characters in the PRC (PRC Secretary Bureau of the General Office of the State Council 國務院辦公廳秘書局: Tōngyòng Guīfàn Hànzìbiǎo 通用規範漢字表 (General Standard Chinese Characters Table), 2013).

words of Indo-European languages suggested by the term "radical" is misleading. We prefer using more neutral terms like "semantic component", "semantophore", or, in view of Chinese dictionaries, "indexing component".

3. Derived characters and reading Chinese classics – Examples from Confucius' Analects.

Below we will discuss examples from Confucius' Analects. The Analects (*Lúnyǔ* "compiled sayings") is a collection of Confucius' sayings and dialogues, mainly with disciples, compiled by disciples or later members of Confucian schools.[40] In the interpretation, we demonstrate three different methods of character analysis. In the first part we interpret early forms of Chinese characters (oracle bones script or bronze script) to state their meaning more precisely. This is a general method of character analysis suitable for any Chinese character. This approach is neither related nor limited to graphically differentiated graphs. In the second part we apply the concept of graphic differentiation and trace derived graphs back to their matrigraph. In the third part we examine series of sister characters that are all derived from a joint matrigraph and which share a joint phonophore. Through a comparison of character series, we identify an original meaning, a "semantic core" of the phonophores.

The interpretation of Confucius' sayings shows that a palaeographic analysis can be a fruitful method for reading Chinese classics supplementing other interpretative approaches.

Interpretation of oracle bone script

The graph *yì* 義 means "propriety, appropriateness, fairness, justice" and is a key term of Confucius' teachings. *Confucius says: "A gentleman understands appropriate behaviour (yì), a small man understands profit"* (*Lúnyǔ* 4,16)[41].

Yì 義 is closely related to the word yì 宜 (誼) "suitable, proper, appropriate behaviour" in a concrete situation.[42] The equality of these two *yì* is expressed by the Chinese idiom *"yì* 義 *is what is suitable"* (義者宜也).[43] The only difference between *yì* 宜 and *yì*

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[40] The authorship and date of composition of the *Lúnyǔ* is controversial. For an overview and bibliographic information on textual history see Cheng, Anne: *Lun yü* 論語, in: Loewe, Michael (ed.): Early Chinese Texts – A Bibliographical Guide, p. 313-323, here p. 313.

[41] In this article the *Lúnyǔ* is quoted for Western readers by book and chapter (as in https://ctext.org/analects/xue-er, last time downloaded on 7 December 2023). The Chinese text follows the following edition which is quoted by page numbers: Lùnyǔ Zhùshū 論語註疏, *(Qīng) Ruǎnyuán Jiàokè* (清)阮元校刻, *Shísānjīng Zhùshū* 十三經註疏, *Běijīng* 1980, p. 2471.

[42] Boltz, William G.: Why So Many Laozi-s?, in: Galambos, Imre (Ed.): Studies in Chinese Manuscripts. From the Warring States to the 20th Century, Budapest 2013, p. 14.

[43] Lǐjì Zhèngyì 禮記正義, *(Qīng) Ruǎnyuán Jiàokè* (清)阮元校刻, *Shísānjīng Zhùshū* 十三經註疏, *Běijīng* 1980, p. 1629.

義 is that the latter is a typical Confucian word[44] and related to virtue. When *Zǐzhāng*, a pupil of Confucius asked how to enhance virtue and straighten out confusing points, Confucius replied: *"Rely on loyalty and trustworthiness and renew appropriateness (yì), then you enhance virtue."*[45]

The graph *yì* 義 is derived from the matrigraph *wǒ* 我 "I" (personal pronoun, first person). In oracle bone script *wǒ* was written as 𢦏[46]. This graph depicts a weapon.[47] In oracle bone script *yì* was shaped as 𥎸[48], showing the weapon on the bottom of the graph and a top looking like *yáng* 羊 "sheep", which makes no sense in this context. Based on a study by Hú Wénjiā 胡文嘉 we interpret the upper component 羊 as a simplified writing form of *měi* 美 "beautiful".[49] On these grounds, the character *yì* 義 can be regarded as a weapon adorned with a beautiful headdress, alluding to a "dignified and beautiful manner, beautiful ceremony".[50] The connotation "dignified" is supported by the definition of the *Shuōwén Jiězì*, which explains *yì* 義 as "dignified appearance of oneself"[51].

Confucius was passionate about music and it is hardly possible to properly understand and interpret the *Lúnyǔ* and Confucius without reflecting on music. *Lúnyǔ* 7, 1: *"In the State of Qi he heard the Sháo music, for three months he did not even sense the taste of meat. He said: I never expected that music can bring one so far!"*[52] Confucius also used to sing with others, as we can read in *Lúnyǔ* 7, 32: *"When the master sang together with somebody and it was good, then he requested the other in any case to repeat the song. And after this he tuned in again."*[53]

Music was part of the educational program. The educational program consisted of the so-called six arts (rites, music, archery, charioting, writing, and mathematics). In terms of learning and self-cultivation, Confucius placed a high value on music (*Lúnyǔ* 8,8):

子曰：興於詩，立於禮，成於樂。[54]

The Master says: Songs and poetry elevate us, in the rites we stand, and music leads us to completion and fullness.

The character *yuè* 樂 "music" appears 22 times in the *Lúnyǔ*. In oracle bone script *yuè* "music" was written as 𤲟[55]. The graph shows a string instrument with a wooden body

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[44] *Yì* 義 appears 24 times in the *Lúnyǔ.*
[45] Lúnyǔ Zhùshū, p. 2503.
[46] Great Collection of Oracle-Bone Inscriptions, No. 376.
[47] In Ancient Chinese texts *wǒ* has already lost the meaning "weapon", it only means "I" (personal pronoun).
[48] Great Collection of Oracle-Bone Inscriptions, No. 27979.
[49] Hú Wénjiā 胡文嘉: *Bǔcízhōng de "yì" yǔ "yì" de Běnyì hé Liúbiàn* 卜辭中的 "義" 與 "義" 的本義和流變, in: *Lìyún Yǔyánxué Kān* 勵耘語言學刊 2 (2018), p. 116-126.
[50] The meaning "beautiful ceremony" was again graphically differentiated by adding the semantophore 亻 "person". The derived graph for the meaning "ceremony" is yì 儀.
[51] 義，己之威儀也, cf. Xǔ Shèn, *Shuōwén Jiězì*, p.267 .
[52] Lúnyǔ Zhùshū, p. 2482.
[53] Lúnyǔ Zhùshū, p. 2484.
[54] Lúnyǔ Zhùshū, p. 2487.
[55] Great Collection of Oracle-Bone Inscriptions, No. 36905.

at the bottom and strings on the top. In bronze script, it turned into ♀[56] and a thumb was added between the strings indicating the instrument being played. The graph suggests instrumental performance of music.

In the center of Confucius' thought is *rén* 仁, usually translated as "humanness, goodness, love, benevolence". In the Analects, *rén* occurs more than a hundred times. The graph *rén* 仁 is composed of two elements: *rén* 亻"person" plus 二 "two". The graph implies a duality, a relation between two persons and can therefore be associated with meanings as "loving", "caring" for others, or "sympathy". When *Fánchí*, a disciple, asked Confucius what *rén* is, Confucius answered "love" (*ài* 愛). However, Confucius spoke differently to every disciple, taking into consideration the different individual abilities and needs of his students. *Fánchí* was the most stupid and untalented student. The answer "love" is only the simplest part of *rén* that even an ignorant *Fánchí* could understand. In contrast, here is what Confucius answered to his best, most loved and most talented student *Yányuān* (*Lúnyǔ* 12,1):

顏淵問仁。子曰：克己復禮為仁。一日克己復禮，天下歸仁焉。為仁由己，而由人乎哉？[57]

Yányuān asked what *rén* is. The Master replied: Practising *rén* means to subdue oneself and to restore the rites. If somebody subdues himself and restores the rites for a single day, then everybody under the heaven will return to humanness. Practising *rén* relies on oneself. How can it depend on others?

Confucius says that *rén* means to "subdue oneself and to restore the rites". This explanation shows another side of *rén* which is based on oneself or the subordination of oneself. This understanding can be supported by the paleographic analysis of *rén:*

In 1993, bamboo slips were unearthed from the *Guōdiàn* tombs in *Jīngmén*, in *Húběi* Province. The *Guōdiàn Chǔ* slips date back to the Warring States period. On these bamboo slips the word *rén* was written as 息 with the elements *shēn* 身 "body, ego, oneself" on the top and *xīn* 心 "heart, thought" at the bottom of graph. This combination of "oneself" and "heart" can be interpreted in a way that *rén* is related to a practice or cultivation of "one self's mind".[58]

Tracing the origins of graphs (from derived graphs back to matrigraphs)

The time of Confucius can be characterised by the Chinese idiom: *lǐbēng yuèhuài* 禮崩樂壞 "rites and music are in ruin", society is in total disarray. In the following saying, Confucius complains that his contemporaries have not understood the substance of rites and music (*Lúnyǔ* 17, 11):

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[56] Corpus of Yin and Zhou Inscriptions, No. 249.

[57] Lúnyǔ Zhùshū, p. 2502.

[58] A comprehensive overview on the etymology of *rén* 仁 is provided by Behr, Wolfgang: Der gegenwärtige Forschungsstand zur Etymologie von *rén* 仁 im Überblick, in: Bochumer Jahrbuch zur Ostasienforschung 38 (2015), S. 199-224.

子曰：禮云禮云，玉帛云乎哉？樂云樂云，鐘鼓云乎哉？ [59]

The Master says: They speak repeatedly of rites, but does that mean to only speak about gems and silk? They speak repeatedly of music, but does that mean to only speak about bells and drums?

The graph *lǐ* 禮 "rites" is derived from the matrigraph *lǐ* 豊. In oracle bone script *lǐ* 豊 is an associative compound which is composed of the elements *zhù* 壴 "drum" and *jué* 珏 "two pieces of jade put together". In the days of Confucius, jade and drums were used during sacrificial rituals. The graph *lǐ* 豊 with its two pieces of jade and a drum means "sacrificial ritual".[60] During the Warring States period the semantic component *shì* 示 "ancestral tablet for sacrifices" was added to *lǐ* 豊 forming a picto-phonetic character. *Shì* 示 shows a tablet on which an ancestral image or deity made of wood or stone was placed. The compound *lǐ* 禮 alludes to an interaction with deities or ancestors through sacrifice.

The component *lǐ* 豊 in *lǐ* 禮 has obviously two functions: It represents the sound *lǐ* and its original meaning "sacrifice" at the same time. In Chinese, this kind of character is sometimes referred to as "simultaneous picto-phonetic and associative compound" (形聲兼會意字). In addition, for the semantic component 示 in *lǐ* 禮 we identify two functions: carrying meaning ("ancestral tablet") and calligraphically differentiating the character from its matrigraph *lǐ* 豊.

𧮫 [61]	𧮦 [62]	禮 [63]	禮 [64]	禮
oracle bone script	bronze script	Warring States period	small seal script	regular script

Figure 6: Matrigraph lǐ 豊 and the derived character 禮 lǐ "rites".

Confucius and his contemporaries understood the rites, unwritten rules of behaviour, and ceremony as their culture and a means to regulate social interaction and order. Confucius went further and connected the rites with self-cultivation. This is why he criticised his contemporaries by saying (*Lúnyǔ* 17, 11): *"They speak repeatedly of rites, but does that mean to only speak about gems and silk?"*[65]

One of Confucius's political ideas is "governing by virtue". This means that the ruler cultivates himself and becomes a positive role model for his subjects. In *Lúnyǔ* 17, 11 Confucius says: *"If you lead them with government and regulate them with punishment, the*

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[59] Lúnyǔ Zhùshū, p. 2525.
[60] In Ancient Chinese *lǐ* 豊 is also used as loan graph to write other words, for example *lǐ* 醴 "sweet wine" and *tǐ* 體 "body".
[61] Great Collection of Oracle-Bone Inscriptions, No. 32557.
[62] Institute of Archaeology of CASS 中國社會科學院考古研究所 (ed.): *Yīnzhōu Jīnwén Jíchéng* 殷周金文集成 (Corpus of Yin and Zhou Inscriptions), *Běijīng* 2007, No. 6014.
[63] Xú Zhōngshū 徐中舒: *Hànyǔ Gǔwénzì Zìxíngbiǎo* 漢語古文字字形表 (List of Graphems of Ancient Chinese Characters), *Chéngdū* 1981, p. 5.
[64] Xǔ Shèn: *Shuōwén Jiězì*, p. 7.
[65] Lúnyǔ Zhùshū, p. 2525.

people will avoid such punishment and feel no shame. But if you lead them by means of virtue and regulate them with the rites, they have a conscience and follow."[66] *Lúnyǔ* 12, 17 deals with *zhèng* 政 "government, politics":

季康子問政於孔子。孔子對曰：政者，正也。子帥以正，孰敢不正。[67]

Jì Kāngzǐ asked Confucius about government. Master Kong answered him: "Government means to be right. If you lead by being right, who dares not to be right?"

In oracle bone script the graph *zhèng* 正 shows a foot going towards a city. The city is indicated by a circle. In Ancient Chinese, the character can mean "right, upright", "to correct", "to send armed forces against" or "government". In bronze script, the semantic component *pū* 攵 "a whip in a hand" was added which generally refers to "behaviour, action". The new graphically differentiated character *zhèng* 政 usually means "government, politics". Confucius' reply to *Jì Kāngzǐ,* a powerful minister of the State *Lǔ*, is remarkable because Confucius begins his admonition with a pun on the homophonic words *zhèng* 正 and *zhèng* 政. In Chinese, the saying of Confucius reads like "the *zhèng* is *zhèng*". *Lúnyǔ* 12, 17 shows that the author or writer of the saying was aware of the graphical relation and difference between the two characters.

![oracle bone graph][68]	![bronze script graph][69]	![Warring State graph][70]	政
oracle bone script	bronze script	Warring State period	regular script

Figure 7: The historical development of the matrigraph zhèng 正 and the derived character zhèng 政.

The following saying of Confucius is about the innate human nature, *Lúnyǔ* 17, 2:

子曰：性相近也，習相遠也。[71]

The Master says: Men are by nature close to each other, but through practice far apart from each other.

The graph *xìng* 性 "nature" is derived from the matrigraph *shēng* 生 "to grow, to give birth to, to generate, to produce". In oracle bone script the matrigraph depicts a sprout growing out of the earth. The original meaning of *shēng* is "to grow".

Antique philosophical texts from the Pre-Qin period deal with the "human nature", for example, with the question whether the human nature is "good" or "evil". One famous example is the beginning of the *Doctrine of the Mean* (*Zhōngyōng*). The beginning reads as

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[66] Lúnyǔ Zhùshū, p. 2461.
[67] Lúnyǔ Zhùshū, p. 2504.
[68] Great Collection of Oracle-Bone Inscriptions, No. 22336.
[69] Corpus of Yin and Zhou Inscriptions, No. 249.
[70] Bamboo Slips from the *Qín* Tomb in *Shuìhǔdì, Wéilìzhīdào* 為吏之道, No. 7.
[71] Lúnyǔ Zhùshū, p. 2524.

follows: *What Heaven confers is called 'nature'. To realise the nature is called the 'Way'. To cultivate the way is called 'teaching'* (天命之謂性，率性之謂道，修道之謂教)[72]. We see that human nature is understood as an intrinsic quality conferred by Heaven. In Ancient Chinese, "nature" was originally written with the graph *shēng* 生 "to grow, to give birth to" because it is given by birth. During Han dynasty the graph was differentiated to *xìng* 性 "nature" by adding the semantic component 忄 "heart, thought". The graph 忄 evokes the connotation that inborn human nature is rather a mind feature.

![][73]	![][74]	![][75]	![][76]	性
oracle bone script	bronze script	Warring State period	clerical script of Hàn dynasty	regular script

Figure 8: Development of the matrigraph shēng 生 *and the derived character* 性 *xìng "nature".*

Connecting and comparing series of Chinese characters

In this section, we introduce a different "horizontal" approach of analysing graphs: We group characters which share the same phonophore (the same sound bearing graph) in order to identify a joint connotation of the character series.

A matrigraph can differentiate into various different graphs which all share the same sound bearing component. Chinese scholars have discovered very early that graphs sharing the same phonetic component have correlating meanings.

In his Dream Pool Essays[77] the Song dynasty scholar and scientist *Shěn Kuò* (1031-1095) refers to the *Doctrine of the Character's Right Side Component* (右文說) of *Wáng Shèngměi*. *Wáng Shèngměi* was the first Chinese scholar describing a theory according to which the left semantic component of picto-phonetic characters functions as an indexing component and the phonophore on the right side of the character is not only sound-bearing, but simultaneously represents a meaning which is shared by all Chinese characters with the same phonophore. In the *Yìwén* chapter of the Dream Pool Essays we read the following:

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[72] Lǐjì Zhèngyì, p. 1625.
[73] Great Collection of Oracle-Bone Inscriptions, No. 6673.
[74] Corpus of Yin and Zhou Inscriptions, No. 4214.
[75] Bamboo Slips from the *Qín* Tomb in *Shuìhǔdì*, *Rìshūyǐzhǒng* 日書乙種, No. 239.
[76] *Hànyǔ Dàzìdiǎn Zìxíngzǔ* 漢語大字典字形組, *Qínhàn Wèijìn Zhuànlì Zìxíngngbiǎo* 秦漢魏晉篆隸字形表, Chéngdū 1981, p. 742.
[77] The Dream Pool Essays (*Mèngxībǐtán* 夢溪筆談) published in 1088 are an encyclopaedic work which cover an extremely wide range of subjects, including mathematics, astronomy, anatomy, optics, geology and many others.

古之字書，皆從左文，凡字其類在左，其義在右，如木類其左皆從木。所謂右文者，如戔，小也，水之小者曰淺，金之小者曰錢，歹而小者曰殘，貝之小者曰賤，如此之類皆從戔為義也。[78]

Ancient dictionaries are all organised according to a section header on the left side of the character. The class of the characters is on the left side, but their meaning is on the right side, like the class of characters with *mù* 木 "tree" all have the section header *mù* "tree" on the left. The so-called character's right side component is for example *jiān* 戔 "small": The smallness of *shuǐ* 水 "water" is called *qiǎn* 淺 "shallow", the smallness of *jīn* 金 "gold, metal" is called *jiǎn* 錢 "shovel, hoe", the smallness of *è* 歹 "remains, corpse" is *cán* 殘 "incomplete", the smallness of *bèi* 貝 "monetaria, cowry" is called *jiàn* 賤 "cheap". The characters of this class all have *jiān* 戔 "small" as a joint component.

The mentioned characters 淺錢殘賤 form a series sharing the same phonetic component *jiān* 戔 "small". This phonetic component simultaneously expresses the meaning "small" (phonetic-semantic double function). For 氵 "water" the smallness means that it is not deep, i.e. "shallow" water (*qiǎn* 淺). For metal (*jīn* 金) the smallness is a small farming tool, like a "hoe" (*qiǎn* 錢). For "remains" (*è* 歹) the aspect of smallness means "incomplete" (*cán* 殘). And for monetaria or cowry (貝), a sea snail species the shell of which was used as shell money, the smallness is the small price, being "cheap" (*jiàn* 賤). All these four characters share a joint meaning ("small") which is expressed by the phonophore on the right side of the graph.

In the following examples we will apply this "horizontal" approach of identifying character series sharing a common phonophore to examples from the Analects. We start with an excerpt from *Lúnyǔ* 6, 30:

夫仁者，已欲立而立人，已欲達而達人，能近取譬，可謂仁之方也已。[79]

A humane man, himself desiring to be established, he establishes others, himself desiring to be successful, he makes others successful, being able to compare oneself with others may be called a method of humanness.

In the *Shuōwén Jiězì*, the character *pì* 譬 from our example is defined as "to instruct, to tell" (谕也)[80]. *Pì* 譬 is derived from the matrigraph *bì* 辟 "criminal law, crime, monarch". In excavated silk and bamboo texts from the Qin and Han dynasty *pì* 譬 was still written as *bì* 辟. From the fact that the *Shuōwén Jiězì* already records the derived character *pì* 譬 we can conclude that the graphical differentiation occurred during the Han dynasty.

Bì 辟 is the matrigraph for a series of characters which all share this matrigraph as phonophore: *bì* 臂, *bì* 嬖, *pì* 譬, *pī* 劈, *pì* 闢, *bì* 避. All these characters have the connotation "separate to two sides" in common. Below, we show three steps for each of the characters: First, we start with the generic meaning of the semantic component (for example 月 "body part" in *bì* 臂). Secondly, we add the joint meaning of the phonophore which we can

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[78] (Sòng) Shěn Kuò (宋)沈括: *Zhū Yǔchén Yìzhù* 諸雨辰譯注, *Mèngxī Bǐtán* 夢溪筆談, *Běijīng* 2022, p. 326.
[79] Lúnyǔ Zhùshū, p. 2479.
[80] Xǔ Shèn: *Shuōwén Jiězì*, p.51.

identify in the entire series (辟 "separate to two sides"). Thirdly, we indicate the associated meaning of the entire character. The third item (after "=") is the real meaning of the character in Ancient Chinese (for example *bì* 臂 = "arm").

bì 臂: "body part" (月) + "separated to two sides" = "arm"
bì 嬖: "women" (女) + "seated at the two sides of the ruler" = "to treat as favourite"
pī 劈: using a "knife" (刀) (or axe) + "to separate wood to two sides" = "to split, to chop"
pì 闢: let "(swing) doors" (門) + "be separated to two sides" = "to open up"
bì 避: use "walking" (辶) + "to get separated to two sides" = "to evade"
pì 譬: "to say" (言) + "(in view of) two separated sides (you and me)" = "to instruct by comparison" or "to compare myself with others"

So the character *pì* 譬 from our above example Lúnyǔ 6, 30 follows the same model and is related to persons who are "separated to two sides", for example me and you. The graph *pì* 譬 means "to compare myself to others" or "to understand others by comparing myself with them."

Confucius' saying that "being able to compare oneself with others may be called a method of humanness" is closely related to the Golden Rule in Lúnyǔ 15, 24[81]: *"Zǐ Gòng asks: "Is there one word saying what one should practise through the whole life?" The Master replies: "Probably consideration for others. Don't do to others, what you do not desire for yourself".*

In the following example (*Lúnyǔ* 7, 7) we encounter Confucius as a teacher who is approached by someone who wishes to become a student of Confucius:

子曰：自行束脩以上，吾未嘗無誨焉。[82]

The Master says: If one takes the initiative and gives me at least a bundle of dry meat, I have never rejected teaching anyone.

Apparently, Confucius was ready to teach everybody, including poor students. But he expected that students took the initiative and showed a minimum of respect and attitude to him by presenting at least a humble tuition fee. Let's have closer look at the graph *huì* 誨 and the connotations of this "teaching": According to the *Shuōwén Jiězì* it means "to enlighten, to instruct" [83]. The phonophore of the graph *huì* 誨 is *měi* 每. There is a number of Chinese characters sharing this phonophore such as *hǎi* 海, *huì* 晦, *huǐ* 悔 etc. What is the connecting meaning shared by this character series? *Hǎi* 海 means "sea, ocean": The sea is vast, boundless and indistinct and its deep water is gloomy and dark. Starting from here we observe that all characters with the sound-bearing component *měi* 每 have a similar connotation of "boundless and dark":

hǎi 海: "waters" + "boundless and dark" = "sea, ocean"
huì 晦: "colour of the sky" (日) + "boundless and dark" = "night, dusky, last day of the lunar month"

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[81] Lúnyǔ Zhùshū, p. 2518.
[82] Lúnyǔ Zhùshū, p. 2482.
[83] Xǔ Shèn: *Shuōwén Jiězì*, p.51.

huǐ 悔: "heart, thought" (忄) + "to be aware of darkness (ignorance)" = "to regret"
huì 誨: to open by "words" (言) + "someone in darkness, unenlightened" = "to enlighten, to instruct"

In summary, the comparison proves that the graph *huì* 誨 does not only mean "to instruct, to teach", but that is has a connotation of "enlightening" somebody who is in an unclear "state of darkness". The etymology suggests that Confucius' teaching included verbal inspiration of the students. This example also shows that the explanations of *Shuōwén Jiězì* can be very precise, in particular for reading Confucian classics.

The last example is the very first saying of the Analects (*Lúnyǔ* 1, 1). It is about learning and every Chinese learns it.

子曰：學而時習之，不亦說乎？有朋自遠方來，不亦樂乎？人不知而不慍，不亦君子乎？ [84]

The Master says: Is it not pleasant to learn something and to practise it regularly? Is it not joyful to have friends coming from distant places? Is he not a gentleman if he is not getting angry although others don't understand him?

The two words *yuè* 說 and *lè* 樂 seem to be synonyms both meaning "happy, joyful". The question arises whether the two words are really interchangeable or whether there is any difference in meaning? The character family of *yuè* 說 can be described as follows: The matrigraph is *duì* 兌 "breathing out". The phonophore 兌 is shared by the following derived sister graphs: 堄, 脫, 蛻, 說, and 悅. The character *duì* 堄 means "(dug-up) opening, cave, channel".

In the *Shuōwén Jiězì* the character *tuō* 脫 is explained as "to eliminate flesh to become thin"[85], i. e. "to reduce body weight". And the graph *tuì* 蛻 is defined in the *Shuōwén Jiězì* as "skin cast off by snakes and cicadas (during moulting)"[86]. The graphs 堄, 脫, 蛻, 說 seem to have a connotation of "to release, to set free, to get free of" in common.

duì 堄: "to free" an opening" + in "an earth barrier"(土) = "(dug-up) opening, cave, channel"
tuō 脫: "to get free of" + "bodily flesh" (月) = "to eliminate flesh to become thin"
tuì 蛻: "to get free of" + "skin of snakes and cicadas" (虫) = "skin cast off by snakes and cicadas (during moulting)"
shuō 說 : "to release your thought by" + "words" (言) = "to speak"
yuè 悅: "to get free of" = "doubts, worries" (忄) = "releasing, liberating happiness, joy"

From the analysis we can see that *yuè* 悅 has a connotation of "to release, to set free".

Learning as part of self-cultivation is one Confucius' leitmotifs. If during learning or practice any questions or doubts can eventually be solved, this will cause a sudden feeling of release and a liberating joy.

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[84] Lúnyǔ Zhùshū, p. 2457.
[85] 脫，消肉臞也, cf. Xǔ Shèn: *Shuōwén Jiězì*, p. 88.
[86] 蛻，蛇蟬所解皮也, cf. Xǔ Shèn: *Shuōwén Jiězì*, p. 281.

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