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# An Introduction to John Fryer's Theories on Translation into Chinese:

## *Records of the General Conference of the Protestant Missionaries of China*

Gabriele TOLA\*

John Fryer (1839–1928) was one of the most prolific foreign translators in China during the second half of the nineteenth century. The purpose of this article is to present in detail the theoretical background of Fryer's activity as a translator: the paper analyzed can be considered a summary of Fryer's work for the Jiangnan Arsenal and of his theories about translation into Chinese. The four parts of Fryer's speech will be examined and its implications on his translation activity will be stressed; the author of the article will point to recent interpretations and the latest studies as references to analyze the theories put forth by Fryer. The author hopes his work can represent an instrument for researchers of John Fryer and, in general, the translation activities that took place in the framework of the phenomenon known as *Xixue Dongjian* 西學東漸.

Keywords: John Fryer, Jiangnan Arsenal, Translation, Chinese,  
Technical and scientific lexicon

### Introduction

John Fryer (1839–1928)<sup>1)</sup> was one of the most prolific foreign translators in China during the second half of the nineteenth century. Known in Chinese by the name Fu Lanya 傅蘭雅, Fryer was born in England on August 6, 1839. Fryer moved to Hong Kong in August 1861, where he worked for St. Paul's College for about two years, taking up office as a professor of English for the *Tongwenguan* 同文館 in 1863. In 1865, Fryer left Beijing and headed to Shanghai in order to establish the Anglo-Chinese School–*Ying hua shuguan* 英華書館. He was then offered work at the *Fanyiguan* 翻譯館 of the Jiangnan Arsenal–*Jiangnan jiqi zhizao zongju* 江南機器製造總局; his

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1) Information on Fryer's life provided in this paper comes from Bennett 1967. Other information can be found in Eyster 1912, Dagenais 2010 and in Fryer Papers, carton 3, folder 32, "Genealogy of the Fryer family", kept at the Bancroft Library, University of California, Berkeley (UCB).

cooperation with the Arsenal began in 1868<sup>2)</sup> and it continued until 1896, when Fryer moved to the United States to become the first Agassiz Professor of Oriental Languages and Literature at University of California, Berkeley<sup>3)</sup>.

The purpose of this article is to present in detail the theoretical background of Fryer's activity as a translator: since the paper analyzed was published in the last phase of his stay in China it can be considered a summary of Fryer's work for the Jiangnan Arsenal and of his theories about translation into Chinese. The four parts of Fryer's speech will be examined and its implications on his translation activity will be stressed; the author of the article will point to recent interpretations and the latest studies as references to analyze the theories put forth by Fryer.

The author hopes his work can represent an instrument for researchers of John Fryer and, in general, the translation activities that took place in the framework of the phenomenon known as *Xixue Dongjian* 西學東漸. The author also wishes to highlight the importance of deeper examination of different records of conferences of Protestant missionaries: these proceedings often include fundamental – but sometimes neglected – information for scholars conducting research on the aforementioned movement<sup>4)</sup>.

## 1. Between Phonemic Loans and Descriptive Terms: Innovation in Technical and Scientific Lexicon

The title of the paper presented is “Scientific Terminology: Present Discrepancies and Means of Securing Uniformity”<sup>5)</sup>. The text was the basis for Fryer's speech during the conference of Protestant missionaries of China, Shanghai 1890; it integrates many of his theories on translation and on the evolution of Chinese lexicon, expressed in different circumstances<sup>6)</sup>.

The paper is divided into four parts: the first one is “Scientific terminology in its relation to

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2) Fryer translated an unknown number of technical and scientific texts from English to Chinese, but he is mainly famous for creating, together with Xu Shou 徐壽 (1818–1884) a naming system for chemical elements in Chinese. The literature on the topic is extremely abundant; among others, refer to ALLETON, ALLETON 1966, Wright 2000, Wang 2000, Shen 2010 and Li 2012.

3) For a more detailed discussion of Fryer's activities as a Professor at UCB, consult Chun 2005.

4) As already mentioned in Tiedemann 2010, 53, they “[...] provide good indications concerning the views held by individuals and groups within the [...] Protestant missionary community in China”.

5) Fryer 1890. The article has been republished in Dagenais 2010, vol.2, 376–410. A Chinese translation of the text by Sun Qing 孙青 and Hai Xiaofang 海晓芳 can be read in *Wakumon* 或問, 2009, no.16, 117–135.

6) Refer for example to: “The Advisability, or the Reverse, of Endeavouring to Convey Western Knowledge to the Chinese Through the Medium of Their Own Language”, *Journal of the North China Branch of the Royal Asiatic Society*, 1886, New series, vol.21, no.1, 9–11; Fryer 1880, 8–11; Fryer 1896.

the Chinese Language”<sup>7)</sup>. It is important to see how Fryer, despite for different reasons not being a missionary<sup>8)</sup>, begins his speech by emphasizing that, “At the present crisis in the history of China [...], scientific terminology becomes a subject of no small importance from a missionary point of view”<sup>9)</sup>. Thus, he deliberately places importance of technical and scientific terminology on the same plane of the role it may play in missionary work; Fryer thereby hoped that the question would have received the attention it deserved.

Fryer then conducts a detailed analysis to illustrate how the evolution in Western countries in terms pertaining to scientific branches was already in a relatively advanced phase. Consequently, according to his words, the technical and scientific nomenclature was in a mature stage of its development, having already passed through different phases where terms, “[...] while expressing more or less accurately the attainments of one generation, have either to be discarded, or else retained as a useless encumbrance”<sup>10)</sup>.

According to Fryer, China thus had the undeniable advantage of being able to use this body of knowledge without all the encumbrances which its evolution would have implied. The only problem was which nomenclature would express this knowledge: “Does it not well become all who take an interest in the progress of China to see that these truths are clothed in the most effective nomenclature that can be devised in the Chinese language?”<sup>11)</sup>.

The problem lay in the fact that this nomenclature was becoming more cumbersome and was already following diverging paths, exactly as Fryer had already personally ascertained: “The language is already beginning to be burdened with different sets of technical terms expressing one and the same idea”<sup>12)</sup>. As he rhetorically asks, “[...] is there any reason why the Chinese language should pass through such a series of transformations as far as scientific terminology is concerned? Nearly everything in the way of modern science is still new to China. In framing her new nomenclature, therefore, there should be very little room or necessity for radical alterations, unless some great revolution in science should happen and cause a universal change”<sup>13)</sup>.

Apart from some paternalistic considerations on the possibility to transmit a whole body of knowledge supposedly almost unknown in China, it was indeed true that some of the sectors

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7) Fryer 1890.

8) After starting his career in China as a missionary, Fryer decided instead to devote his life to the translation of scientific and technical books, as well as the publication of textbooks and other educational works. On the topic, refer to Bennett 1967, 7 and followings, and Wright 2000, 108 and followings.

9) Fryer 1890, 531.

10) Ivi, 532.

11) Ivi, 533.

12) *Ibidem*.

13) *Ibidem*.

covered in the translations completed by Fryer and his Chinese colleagues, such as chemistry, fell outside the traditional imperial examination system, *keju* 科举<sup>14)</sup>. For this and other sectors trying to create, *ex novo*, a standardized nomenclature would be a relatively easy task if there had been cooperation between those engaged in the translations. As stated by Fryer, “It is a task that requires the most careful and mature consideration, not of one, or half-a-dozen men, but of every person who takes part or interest in the advancement of China”<sup>15)</sup>.

Among the causes that led to the existence of different nomenclatures, Fryer lists the fact that, “Up to the present stage nearly all that has been done in this direction, excellent though much of it really is, has been by isolated individuals, and is too much of an empirical or too empirical tentative character”<sup>16)</sup>. Fryer also regrets that, “No one seems to have grasped the subject of Chinese nomenclature in its entirety and made it a life-study or life-work”<sup>17)</sup>. It was exactly for this purpose that he had been working for the Jiangnan Arsenal since 1868; Fryer was deeply aware of the complexity of the situation.

Confronted with numerous claims stating that it was the Chinese language itself hindering a more precise definition of the technical and scientific reality<sup>18)</sup>, Fryer once more rhetorically asks: “The difficulties in the way are serious, but are they not more on the part of foreigners themselves than on account of the nature of the Chinese language or the opposition of the natives?”<sup>19)</sup>.

In order to reach a general scheme and place the discussion on the table with other participants, he makes an excursus explaining the systems Chinese language used to enrich its technical and scientific lexicon. According to what Fryer affirms:

“[...] the names of new ideas, objects or operations, have been introduced into the language from other countries in three ways. The first is what may be called the descriptive method, the second the phonetic, and the third a combination of the other two. For instance 烟葉, meaning literally ‘smoke leaves’ is the popular name for tobacco, and is manifestly a descriptive term. 金雞那 is the well-known name for the cinchona bark introduced by the Jesuits, and is an

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14) Refer to Reardon-Anderson 1991, 77 and passim.

15) Fryer 1890, 533.

16) *Ibidem*.

17) *Ibidem*.

18) Refer also the aforementioned “The Advisability”, 9–11. In Fryer 1896, 159, he will state: “Not only does there exist nothing in the Chinese language making the reception of Western scientific ideas a matter hard to accomplish, but on the direct contrary there is a special adaptability for that purpose not to be found in any other language all over the world. There is a peculiar elasticity, expressiveness and terseness in the written language of the Middle Kingdom, through which it lends itself or accommodates itself to the reception of foreign ideas generally, and to the formation of new but easily intelligible scientific terms in particular”.

19) Fryer 1890, 533–534.

instance of a phonetic term. 袈裟 is not only the phonetic term for the Kashaya or Cassock of the Buddhist priest, but it is at the same time a descriptive term, because both characters are written with the radical 衣 for clothing under them”<sup>20)</sup>.

Analyzing these principles in the light of modern linguistic nomenclature, it will be possible to identify as calques and descriptive labelling<sup>21)</sup> what Fryer calls the “descriptive term”; on the other hand, the definition “phonetic term” indicates phonemic loans, as can be clearly inferred from the example of *jinji'na* 金雞那. Regarding the third group, it is highly probable that Fryer was referring to what nowadays are known as hybrids and loan blends; the example provided, though, is misleading, since *jiasha* 袈裟 has to be considered a fully-fledged phonemic loan.

More important considerations continue in the following pages, where Fryer underlines how “The Chinese seem to have naturally preferred descriptive terms where they were possible [...] Lastly come the purely phonetic terms, which save so much trouble to lazy or ignorant translators that they are much used by them”<sup>22)</sup>. Fryer then adds:

“[...] to the different classes of Chinese readers and learners they are, as a rule, highly objectionable and repulsive, especially when a term consists of several characters, which are not only a great burden to read, write or remember, but give no clue whatever to the meaning. The only legitimate excuse for using the phonetic method is for terms that are absolutely untranslatable in any other way”<sup>23)</sup>.

In the analysis conducted, Fryer calls to mind one of the basic peculiarities of Chinese: phonemic loans are not easily integrated into the lexicon of the language, especially if composed of many characters. In contemporary Chinese, phonemic loans represent a very low percentage of the

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20) Ivi, 534. In “The Advisability” it is possible to read a series of opinions by different figures on the likelihood to transmit Western knowledge to China through Chinese language. In the text, at page 10, Fryer states: “There are two ways by which new terms seem to be introduced into Chinese, and which may be termed the descriptive and the phonetic methods”. As can be inferred from the quotation, the idea of a third method was developed by Fryer in a later and more mature stage of his theories on translation.

21) There are evident discrepancies in the relevant nomenclature among different articles and monographs; in the present work, the author will use as a reference the one adopted in T'sou 2001.

22) Fryer 1890, 534. Fryer reaffirmed this idea in many circumstances in Fryer 1896, 157–158. Even so, he had to face umpteenth statements by other translators on the impossibility for Chinese to clearly express the technical and scientific reality. He will reply as follows: “It really is often a matter of little importance whether we phoneticize a new term, or whether we make the term self-descriptive or self-evident”.

23) Fryer 1890, 534.

whole lexicon<sup>24</sup>); among these, terms composed by more than three characters are an exception. This feature, which would have been successively studied in different articles and monographs<sup>25</sup>, was not universally recognized by other contemporaneous translators and scholars. It is sufficient to mention here the reply to Fryer's speech by "Rev. Y. K. Yen"<sup>26</sup>:

"[...] I would advise the phoneticizing of the foreign terms by Chinese characters, rather than having them translated, for in many cases the terms cannot be translated except by a string of characters, which practically amount to definitions. Phoneticizing takes well with the Chinese. For instance, during the Franco-Chinese war *ultimatum* was rendered ai-ti-mei-tun, which, though at first strange, soon became familiar to all, and represented the same meaning to a Chinese as the original word to you. In like manner, telephone is known as teh-li-fung"<sup>27</sup>.

Or also, the reply by Calvin Wilson Mateer (狄考文 狄考文, 1836-1908): "I wish to emphasize Mr. Yen's idea of phoneticizing scientific terms. Other things being equal, it is, as a rule, better to phoneticize than to translate". Many translators contemporaneous to Fryer used, and sometimes overused, phonemic loans<sup>28</sup>, either for lack of will to cooperate with other colleagues or not having sufficient scientific and linguistic knowledge.

Fryer then goes on to explain how branches such as pharmacology<sup>29</sup> and legal medicine rapidly developed in China, also from the point of view of nomenclature; for translations related to such fields the use of already recognized terms was extremely simple. Fryer therefore underlines how other branches of science, in more recent times, had also swiftly expanded, although for those sectors nomenclature was still not ready and new terms had to be coined, following the three methods put forth by himself. Fryer then restates the possibility for Chinese to express, as any other language, the technical and scientific reality through the use of an adequate nomenclature. He reminds that:

"The only real difficulty in the way is the very unscientific manner in which we foreigners go

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24) For a recent study on the topic, refer to Arcodia 2012, 120.

25) For a bibliography of the most important ones, refer to Tola 2016, 329 and relevant footnote no.1.

26) Yan Yongjing 顏永京 (1838-1898). Fryer 1890, 549.

27) *Ibidem*.

28) As an example of awkward use of phonemic loans, two examples are cited in Fryer 1890, 539-540: "granite", translated as *gelanituo* "合拉尼脫", and "gypsum", rendered as *juebusien* "絕不斯恩". These two translations are listed in the *Vocabulary of Mineralogical terms*, one of the glossaries published in Fryer 1888, under the column of terms appearing in the *Manual of Mineralogy* by James Dwight Dana (1813-1895).

29) Refer also to Elman 2005, 29-34.

to work [...]. We rush through the translation [...] coining new terms and phrases right and left without system or order, and phoneticizing freely as we go on, to save the trouble of investigating either what nomenclature the Chinese have had in use for centuries, or what recent translators have already done”<sup>30)</sup>.

The main problem was represented by the discrepancies between existing nomenclatures and by the lack of publication of lists of terms, which would have strongly helped the standardization process and work by other translators. As Fryer states, “Almost every translator or compiler has his own private set of terms, whether technical, geographical or biographical, and keeps them to himself. The number of vocabularies in Chinese and English that have been given for general use or comparison is extremely few”<sup>31)</sup>. Before starting a translation, Fryer believed it was necessary to consult works which treated similar aspects in order to adopt the nomenclatures employed in those works: “In a word, we want *union*, *unanimity* and *uniformity*”<sup>32)</sup>, which were also the prerequisites to ensure the stability of a certain term and substantially contribute to the development of Chinese language. This is a point on which he would go back to later within the same paper.

Subsequently, Fryer provides important information about some of the works he was able to consult personally:

“At that time the only books that I knew of in Chinese treating on modern sciences and arts, were: the works on Astronomy and Mathematics, by Mr. A. Wylie; Mechanics, by Dr. Edkins; Natural Philosophy and Medical Science, by Dr. Hobson; Political and Physical Geography, by Rev. W. Muirhead and others; and Botany, by Dr Williamson. With these should be mentioned the voluminous works of the Jesuit missionaries, which, though two or more centuries old, were often of considerable service, especially in astronomical and mathematical terms. The only useful vocabularies of scientific terms in English and Chinese at that time were: the very limited ones of Mr. Wylie, giving astronomical and mathematical terms; of Dr. Edkins, giving terms in mechanics; of Dr. Hobson, giving terms in natural philosophy and medicine; and of Dr. Bridgman, giving a long series of terms published in his *Chrestomathy*”<sup>33)</sup>.

Later he goes on to describe what can be considered his very first detailed handbook for

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30) Fryer 1890, 535.

31) *Ibidem*.

32) *Ibidem*.

33) Ivi, 536. The sources used by Fryer for his glossaries, of which some were published in 1888 in *The Translator's Vade-mecum*, are analyzed in detail in Tola 2016 (2), chapter 3.



the technical and scientific translation in Chinese. As stated, a system for the scientific nomenclature had already been devised at a much earlier stage by his Chinese colleagues, but “[...] was not published, however, for general information till January, 1880, when it appeared in the *N.-C. Daily News and Herald*, and subsequently in *Nature*<sup>34)</sup>”:

- “1. *Existing nomenclature*.—Where it is probable a term exists in Chinese, though not to be found in dictionaries:—
  - (a.) To search in the principal native works on the arts and sciences, as well as those by the Jesuit missionaries and recent Protestant missionaries.
  - (b.) To enquire of such Chinese merchants, manufacturers, mechanics, etc., as would be likely to have the term in current use.
2. *Coining of new terms*.—Where it becomes necessary to invent a new term there is a choice of three methods:—
  - (a.) Make a new character, the sound of which can be easily known from the phonetic portion, or use an existing but uncommon character, giving it a new meaning.
  - (b.) Invent a descriptive term, using as few characters as possible.
  - (c.) Phoneticize the foreign term, using the sounds of the Mandarin dialect, and always endeavoring to employ the same character for the same sound as far as possible, giving preference to characters most used by previous translators or compilers.

All such invented terms to be regarded as provisional, and to be discarded if previously existing ones are discovered or better ones can be obtained.
3. *Construction of a general vocabulary of terms and list of proper names*. During the translation of every book it is necessary that a list of all unusual terms or proper names employed should be carefully kept. These various lists should be gradually collected and formed into a complete volume for general use as well as with a view to publication”<sup>35)</sup>.

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34) The text can also be read in Fryer 1880, 9–10. The reference here is instead to its original publication in the number of January 29 1880, of *North China Herald*, 77–81, and to the version printed in “Science in China”, *Nature*, 1881, vol.24, May 5, 9–11, and May 19, 54–57. The text was later published in its Chinese version, *Jiangnan zhizao zongju fanyi xishu shilüe* 江南製造總局翻譯西書事略, in *Gezhi huibian*, 1880, June, vol.3, no.5, 10A–12B, July, vol.3, no.6, 9A–11B, August, vol.3, no.7, 9A–11B, September, vol.3, no.8, 9A–10B. The latter version has been reprinted in Zhang 1953, 1–23. The reference comes from Wang 2001, 272, footnote no.4, and Wright 2000, 479 AND 238, FOOTNOTE NO.141.

35) Fryer 1890, 536. On page 537 he will affirm: “If this system, imperfect though it was, had been persistently adhered to, the results would have been more or less satisfactory. A tolerably complete series of lists of terms would now have been in existence instead of only the four or five already published, containing about 18,000 terms, and about the same number in manuscript”. This may represent a reference to *The Translator’s Vademecum* or to its unpublished manuscripts, which are analyzed in Tola 2016 (2), paragraph 3.3.

It is therefore clear how the principles listed a few years before by Fryer, and restated in his speech, are in line with those described here. When starting a translation, Fryer believed it was necessary to search for those Chinese terms which could already exist before freely coining neologisms; for example, by looking in works by Jesuits, those by coeval Protestant translators and among those persons who, for their own occupation, had to deal with specific technical and scientific terminologies. Only in the cases where those terms could not be located were new ones coined.

The first method for coining terms mentioned by Fryer can be considered a peculiar case<sup>36</sup>, since he is here referring to the creation of characters, *zi* 字 not of *ci* 词<sup>37</sup>: the typical example is the nomenclature for chemical elements. The second method calls for the use of “descriptive term”, a category analyzed above; the third and last method not by coincidence, envisages the use of phonemic loans. In this case Fryer underlines the necessity of the consistent use of the same character for the same phoneme, giving preference to those already used by other translators; this is in step with Fryer's theories on the standardization of terminology. In any case, according to him these terms should have been considered provisional and they should have been replaced with already existing terms if they were to be found or if more suitable were to be coined.

On the last point Fryer refers once more to the necessity of gathering such terms in lists with the purpose of publication. The only problem is, as piercingly acknowledged by Fryer, from the date of the publication of his proposal in 1880, the general effort towards this goal was not satisfactory at all and the confusion in terminology reigned supreme in the Jiangnan Arsenal itself: “This is greatly to be regretted, because the labor that would have been involved in seeking out existing terms, carefully thinking out new terms, and in making collections or vocabularies of all the terms used, would have been very small compared with the advantages to be derived”<sup>38</sup>.

Fryer recognizes how the value of the texts translated in Chinese basically depended on the terminology adopted; in particular, abiding by relevant rules in different publications was essential. This principle “[...] was evidently well understood by the Jesuit missionaries. I have sought in vain for vocabularies of their scientific terms in Latin and Chinese; but in all their works that have come under my notice the terminology is as nearly perfect as can be imagined. This, perhaps, goes far to account for the great favor with which they are still regarded by native scholars, even up to the present day”<sup>39</sup>.

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36) As reminded in Masini 1993, iv, this is the only example of lexical innovation of modern Chinese via the creation of new characters.

37) The differences between the two and the relevant nomenclature will be theorized and standardized at a later stage. Refer also to Uchida 2001, 167–199, and Uchida 2010, 113–124.

38) Fryer 1890, 537.

39) *Ibidem*.

Fryer further emphasizes how, if he had been considered personally responsible for mistakes in translations, these flaws should be ascribed to “[...] ignorance or hurry rather than wilfulness”<sup>40)</sup>. On the other hand, as an example of blind obstinacy in the use of one’s own terminology, he quotes the case of *danqi* 淡氣, the “very appropriate term”<sup>41)</sup> used by Benjamin Hobson (He Xin 合信, 1816–1873), for nitrogen and later adopted by William Alexander Parsons Martin (Ding Weiliang 丁韪良, 1827–1916) to indicate hydrogen<sup>42)</sup>.

## 2. The Standardization of Lexicon: Some Suggestions

In the second part of the speech, “Some of the Essential Features for a System of Scientific Nomenclature for China”, Fryer goes into more detail about the different translation choices and their pros and cons; thus he better explains some of the theories he already mentioned in the first part of his speech. In his first point, according to Fryer, “*New terms ought to be translations, where possible, and not mere transliterations*”<sup>43)</sup>. Restating how, “It is readily granted that the Chinese language is poor in technical terms and very inflexible”<sup>44)</sup>, he accuses:

[...] People have come to imagine that the Chinese language requires to be enriched by transliterations from Western sources, and that we have simply to give the sounds of our technical terms in the most convenient Chinese characters. The original meanings of the said characters, or the number that will be required to express an ordinary technical term, seem to such people to be matters of no importance. Instead of enriching, such a method of procedure will tend merely to rob the Chinese language of much of its historical and ideographic charm and beauty, and encumber it with a useless and profitless burden”<sup>45)</sup>.

Fryer has always stressed the importance of avoiding if at all possible the use of phonemic loans. This was not only due to intrinsic features of Chinese language, but also due to the lack of a fixed system of phonetic rendering and for this, once more, translators had to be blamed.

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40) *Ibidem*.

41) *Ibidem*.

42) Wright 2000, 338–339.

43) Fryer 1890, 538. Fryer always indicates phonemic loans as “transliterations” or “phoneticization”, referring to other solutions as “translations”. Read, for example, further on in the same text, page 539: “In the same way it no doubt often happens that even our best translators paraphrase or phoneticize where they ought to translate”.

44) Ivi, 538.

45) *Ibidem*.

The outcome of this situation were extremely evident discrepancies among renderings adopted by one translator or the other, not to mention the cases of those working in different parts of China: "Then, again, there are so many Western languages and so many Chinese dialects, which shall be the standard? If there were but one Chinese dialect and only one European language it would even then be a questionable means to employ unless absolutely necessary"<sup>46</sup>).

Nevertheless, it would be wrong to think that Fryer was *a priori* against the unsystematic use of phonemic loans. He thought phonemic loans should be used when the etymology of a given word could not be traced, for the large amount of work translators had to deal with and for other practical reasons<sup>47</sup>: "It cannot be denied, however, that living languages, generally speaking, are capable of borrowing, and assimilating what they borrow, with great benefit, till it becomes part and parcel of themselves [...] but the advantages are in proportion to the similarity of the language"<sup>48</sup>). Providing different examples of unsuccessful translations, Fryer adds how it would be erroneous to adhere too rigorously to the etymology of the original word.

According to him, a desirable solution would be to search in dictionaries, particularly the *Kangxi zidian*, for those terms that had fallen into disuse and confer them a new meaning<sup>49</sup>). Exactly for this reason he complains of the lack of cooperation on the topic by other translators:

"[...] what if some well-qualified medical missionary like Dr. Dudgeon should take pains to identify every term referring to the human body in the Imperial dictionary, and give its proper English equivalent? Or if some eminent botanist like Dr. Faber should give us an exhaustive list in English of the trees and plants therein mentioned? [...] It is for want of such information that cannot easily be obtained from the dictionaries in every-day use that very funny results appear in the way of translations"<sup>50</sup>).

The problem not grasped by Fryer is, at least from a theoretical perspective, that with the already mentioned one-off exception of the nomenclature for chemical elements, the path followed by the Chinese language was not monosyllabism. The solution for the lexicon, including the technical

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46) *Ibidem*.

47) The example provided by Fryer earlier in the text, *jinji'na* 金雞那, is still listed in contemporary Chinese dictionaries, to indicate plants of the genus *Cinchona*; the only difference is the use of the character *na* 納 in place of the homophone *na* 那.

48) Fryer 1890, 539.

49) Fryer himself will recall, at page 542, that "This has already been attempted in the case of chemical terms, and Chinese scholars seem to be generally satisfied with them". For some examples belonging to the lexicon of chemical elements, refer to Wright 2000, 224-225.

50) Fryer 1890, 539. "Dr. Dudgeon" refers to John Dudgeon (De Zhen 德貞, 1837-1901), "Dr. Faber" refers to Ernst Faber (Hua Zhian 花之安, 1839-1899).

and scientific one, would be polysyllabism instead, through means of the combination of already existing characters, thus resulting in the creation of new words and, consequently, new meanings<sup>51)</sup>.

In his second point, Fryer returns to a topic mentioned earlier in the speech: “*New terms if positively untranslatable must be transliterated by the most suitable Chinese characters obtainable.* [...]”<sup>52)</sup>. What were the cases for which the use of phonemic loans was admissible? Fryer’s reply is clear: “Circumstances alone can determine what is best to do in each case. Some technical words, especially those derived from proper names, are so absolutely untranslatable that there is no alternative but to give them the nearest approximate sounds in the Chinese characters”<sup>53)</sup>. As clearly pointed out by Fryer the use of phonemic loans could represent the best solution, especially in the case of proper names.

Another suggestion provided by Fryer for a better use of phonemic loans, was to adopt “the same characters invariably for such affixes as ic, ia, ine, ite, etc., etc., when they have the same meaning”, in order to avoid confusion and to keep “the original and distinctive root words”<sup>54)</sup>. Ascertaining the inevitability of phonemic loans, Fryer goes on discussing the characters to be used for this aim: “There are many syllabic series of characters well known to the Chinese which might be profitably employed as far as they will go. Such, for example, are the numerous lists from various Asiatic sources that are given in a work by Li Yu-wang known as the 李氏音鑑<sup>55)</sup>. It is important to notice as well that, “It would, perhaps, be possible to have one set of phonetic characters for names of persons, one for names of places, and a third for technical names; so as to enable a Chinaman to see at a glance which of these classes any new term belonged to”<sup>56)</sup>. While listing this set of characters, Fryer provides other information on plausible sources he adopted for his translations and for his glossaries:

“There is a set of characters on page 408 in Doolittle’s Dictionary, Vol.II., giving English syllables with Chinese equivalents, by P. H. Ewer, Esq., and which is very complete as well as extremely useful in rendering all proper names from English into Chinese [...] Some years ago a list of characters was arranged by a committee in Peking for rendering proper names, and

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51) Refer, among others, to Masini 1993, 121-127.

52) Fryer 1890, 540.

53) *Ibidem*.

54) *Ibidem*.

55) Ivi, 541. The work here referred to is *Li shi yin jian* 李氏音鑑, composed by Li Ruzhen 李汝珍 in 1805. A possible explanation for the transcription of the name of the author used here is that he confused him with Li Ruhuang 李汝璜, the brother of Li Ruzhen. I would like to thank Professor Zou Zhenhuan 邹振环 for pointing out this possibility.

56) Fryer 1890, 541.

the Rev. L. D. Chapin prepared a list of geographical names in English and Chinese on that basis. It might also be a valuable aid in framing a system for phoneticizing technical terms”<sup>57)</sup>.

The question was further complicated by the fact that apart from local varieties, there could be significant pronunciation discrepancies even in the standard language among the North and the South: this could lead to major problems in the adoption of phonemic loans. Despite this fact Fryer believed that “[...] it is perhaps possible to find a series of characters of which the dialectical differences in sound throughout the empire would be not very serious”<sup>58)</sup>.

Another factor that made the situation all the more complex is the choice of the Western language to be used as a reference; Fryer thought this choice had to be maintained thoroughly, no matter which language was chosen: “These and many other difficult questions that arise every day in the life of a translator, serve to show how unsatisfactory transliteration is, even though indispensable in certain cases”<sup>59)</sup>.

Fryer further proposes in his third point, “*New terms ought to accord as far as possible with the general construction of the language*”<sup>60)</sup>, and states that, “The radicals form one of the most distinctive features in the Chinese language, and new terms ought not to ignore their extensive importance”<sup>61)</sup>. In other words, he reaffirms that where necessary, characters already in disuse should be taken from the *Kangxi zidian*, giving them a new meaning; he also reminds his audience how this process has been already implemented with success for chemical elements.

The creation of characters, though, posed a huge problem: “The great drawback for all such invented characters is that they are not authorized, and that the more fastidious among the literati object to them sometimes on that account. We have to choose between the two evils”<sup>62)</sup>. Within this regard Fryer once more highlights the productivity of the radical *kou* 口; he particularly points to the role it could play to help Chinese readers in distinguishing characters used solely for their phonetic value and those for their semantic value: “It costs no more to print or read the characters

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57) *Ibidem*. “[...] a set of characters [...]” is a reference to F. H. Ewer’s “List of English Syllables with Chinese Equivalents”, published in Doolittle 1872, 408–412. As for the “[...] list of geographical names [...]”, among Fryer’s manuscripts housed in East Asian Library, volume one is a “List of geographical names” signed by “L. D. Chapin”; the name indicates Lyman Dwight Chapin (1836–1894). Consult Wright 2000, 219, footnote no. 95; for a detailed analysis, refer to Tola 2016 (2), subparagraph 3.3.5.

58) Fryer 1890, 541.

59) *Ibidem*.

60) Ivi, 542.

61) *Ibidem*.

62) *Ibidem*. A long discussion on the possibility to substitute Chinese characters used to express digits with Arabic numerals follows; after that, it is possible to read the reply by Mateer. On the topic, refer also to Wright 2000, 27–29.

with this useful radical than without it. The trouble is little even in writing; while the gain is very great. In compound words, especially where some of the characters are descriptive and some phonetic, it is of the utmost importance that those of which only the sound is used, should have this sign to distinguish them from others”<sup>63)</sup>.

In his fourth point, “[...] *new terms should be short and terse*”<sup>64)</sup>, Fryer underlines that, “It is not necessary that a technical term should be complete in itself, and be an exhaustive description or definition. All that is wanted is one or more characters, enough to distinguish the object or action by”<sup>65)</sup>. He thus references the tendency, established in contemporary Chinese, to shorten those terms which were composed of numerous characters: “The longer the term the more burdensome and awkward it becomes [...] Such as survive will be those that are short, or such as are capable of being shortened to make them more generally serviceable”<sup>66)</sup>. Chinese was relentlessly becoming a polysyllabic language and the idea held up by Fryer that only terse terms would survive in the technical and scientific lexicon should be duly underlined<sup>67)</sup>, though this feature was not really evident to the other foreign translators working in China at the time.

In the fifth point, “*New terms must be accurately and clearly defined*”<sup>68)</sup>, Fryer exhorts his colleagues: “In whatever book or treatise they make their first appearance a careful definition should be given”<sup>69)</sup>. He mentions the Chinese tradition of annotation and explanations, for example to clarify archaic and obsolete terms. Fryer thus rhetorically asks himself why translators should not use this device to help the reader: “A short glossary or index with an accurate definition of the new terms employed, placed either at the beginning or end of a scientific treatise, and arranged according to the radicals or any recognized Chinese system, would prove of the greatest assistance”<sup>70)</sup>.

Fryer’s sixth point for technical and scientific nomenclature reads: “*New terms must bear an analogy with all others of the class they belong to*”<sup>71)</sup>. He points to the importance, when translating

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63) Fryer 1890, 543. Fryer cites here, as an example of a loss opportunity to use this specific peculiarity of Chinese, the “Vocabulary of Medicines” by Thomson; the text referred to is *A Vocabulary of Medicines in English & Chinese* by Jos. C. Thomson, published in 1889 in Canton by E-Shing. The fact that Fryer read at least one of Thomson’s texts is confirmed in Fryer 1890, 545: “If we use descriptive terms, as I notice Dr. J. C. Thomson does, for these words, we must have the same character 甘 common to all, as he appears to do”.

64) Fryer 1890, 544.

65) *Ibidem*.

66) *Ibidem*.

67) Refer to Arcodia 2012, 126 and the relevant footnote 5.

68) Fryer 1890, 544.

69) *Ibidem*.

70) Ivi, 545.

71) *Ibidem*.

terms that share a common semantic field, to keep an evident connection linking them. This would help the reader to identify those terms that have a common root, regardless of the use of phonemic loans or the adoption of other translation choices:

“If we translate “number” as 數, then a fractional number is 分數, a root number is 根數, a factor is 乘數, a multiple is 倍數, and to carry out the analogy a prime number ought to be the character 數 with something before it as a qualifying term, and not 數根, as is used in our translated or compiled arithmetics and in original Chinese ones also”<sup>72)</sup>.

Coming to Fryer's last point, “*Lastly and briefly, new terms must be elastic*”<sup>73)</sup>, he asserts that only practice will determine whether a technical term would be adequate or not for Chinese: “A technical term may appear very appropriate when standing alone in a vocabulary, but when brought into actual use, may be so inconvenient and inflexible that it has to be discarded”<sup>74)</sup>. To conclude the second part of his speech Fryer makes an extremely forward-looking consideration on the future of Chinese scientific and technical lexicon: “[...] the present generation is not going to give China a permanent and final system of technical terms. Neither will the next, nor the next after that [...] A long transition state has to intervene, which only an elastic and accommodating system of nomenclature will tend to abbreviate or to bridge over”<sup>75)</sup>.

Fryer wants to stress that the purpose of his work is not the creation of terms and neologisms for the technical and scientific lexicon. It is instead laying theoretical foundations and highlighting some lexicological features of the Chinese language: later efforts for the creation of a standardized nomenclature, lavished by other translators, should have been laid on this basis.

### 3. Scientific and Technical Terminology: The Causes of Discrepancies

Within the third part of the speech, “The Discrepancies Already Existing in Technical Terms”, Fryer analyzes that which he considers the main causes of divergences in the Chinese scientific and technical nomenclature:

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72) *Ibidem*.

73) *Ibidem*.

74) *Ibidem*. It is interesting to read the example that Fryer gives as an instance of inadequacy: “For instance, chemistry is called 化學 or ‘the science of transformation,’ but when we come to speak of chemicals as 化學材料, ‘the materials of the science of transformation,’ it begins to grow awkward”. *Huaxue cailiao* 化學材料 is indeed part of the title of one of the glossaries he edited for the Jiangnan Arsenal, *Huaxue cailiao zhong xi mingmu biao* 化學材料中西名目表.

75) Fryer 1890, 545-546.



- “1. The want of a sufficient mastery of the Chinese language [...].
2. The want of a thorough acquaintance with all the existing native technical literature and nomenclature [...].
3. The want of a comprehensive knowledge of the subjects treated.
4. The want of careful examination and study of what recent translators have already published [...].
5. The want of intercourse between translators or compilers of scientific books [...].
6. The want of published lists of terms used in existing technical books in Chinese [...].
7. The want of a definite and generally recognized system for rendering new terms [...].
8. The want of a properly constituted society or committee to make or collect lists of technical terms from all available sources and to frame from them a complete scientific dictionary[...].
9. The want of a spirit of accommodation, or of willingness to accept and use terms in current use [...]”<sup>76)</sup>.

For Fryer the discrepancies listed above were not very evident as it would be impossible to find a solution. To sum up his conclusion, the main problems were: translators’ insufficient linguistic expertise, as well as their lack of knowledge on the subject of translation; lack of knowledge on materials previously published in Chinese on the topic, also due to insufficient will to cooperate; and lastly, the absence of a specific organization in charge of the lexicon standardization that would provide the needed help for the publication of technical and scientific dictionaries.

#### 4. Plans for Standardization: Personal Effort and Collective Responsibilities

In the final part of the speech, “Means by Which Discrepancies May Be Avoided”, Fryer tries to provide different solutions to the problems revealed in the previous one.

Despite the experience accrued in the field, “[...] leads me to fear that nothing is likely to be completed by the government for years to come in the way of preparing a comprehensive Chinese Scientific Dictionary [...]”<sup>77)</sup>, Fryer nonetheless specifies that, “Others, as well as myself, are working slowly in different parts of the empire preparing lists of terms in the various sciences and arts, especially of medical terms as also of proper names”<sup>78)</sup>.

He then proposes a nine point solution:

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76) Ivi, 546.

77) Ivi, 547.

78) *Ibidem*. Fryer is here not only referring to the different glossaries published in *The Translator’s Vade-mecum* two years before the conference, but presumptively also to the other editions of the text itself or to other volumes to be published later. Refer also to Tola 2016 (2), paragraph 3.1.

- “1. Let the Conference appoint a committee (or society) of foreign missionaries and others, whose object shall be to promote uniformity in the use of technical terms in Chinese works. [...]
2. Let the committee select the most suitable persons to draw up lists of technical terms in English and Chinese as follows:
  - (a.) Lists of all terms already published or in manuscript;
  - (b.) Lists of all terms in books of native origin;
  - (c.) Lists of all terms in books of the Jesuit missionaries;
  - (d.) Lists of all terms in the works of all Protestant missionaries and other recent writers.
  - (e.) Lists of terms in current use among native officials, merchants, mechanics, etc., relating to the various branches of foreign sciences, arts and manufactures. Not only China and Japan, but foreign countries where Chinese resort, might also furnish lists.
3. Let the committee carefully examine and compare all the above lists, and combine them alphabetically to form the basis of a general scientific dictionary for provisional use.
4. Let a system of general rules for rendering scientific terms be framed from this provisional dictionary, in such a way as to conflict as little as possible with the existing nomenclature.
5. Let as complete a Chinese scientific dictionary as possible be drawn up on the system, and rules determined upon, and published in three forms, viz.:
  - (a.) English and Chinese arranged alphabetically.
  - (b.) Chinese and English arranged alphabetically.
  - (c.) Chinese only, giving an accurate definition of every term.
6. Let all the writers of technical books, already published, be communicated with and asked to alter their terminology in all future editions, to conform to the fixed standard.
7. Let the committee use every endeavor to get the system they frame, and the dictionary they publish, brought before the notice of the central government at Peking and of the provincial governors, with a view to receiving Imperial authority. [...]
9. Let the committee be encouraged to use all due diligence so as to present the complete results of their labors to the next General Conference [...]”<sup>79)</sup>.

To conclude, the suggestions proposed by Fryer envisaged the creation of a committee of experienced persons to promote the standardization of technical and scientific language. The means would be the publication of lists of terms in English and Chinese based on the already existing materials in the specific field; this is a solution consistent with the theories adamantly asserted by Fryer. The purpose would be the drafting of rules for the compilation of a dictionary, to which translators should strictly adhere. The success would be ensured by the approval of the

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79) Fryer 1890, 547-548.

aforementioned central authorities; the results of this work should have been made public during the following conference<sup>80)</sup>.

## Conclusion

The analysis presented here is meant as an introduction and a summary of the theories put forward by Fryer on the translation of technical and scientific lexicon in Chinese. On top of presenting his ideas, Fryer also tried to provide his answers to the problems he encountered during his activity for the Jiangnan Arsenal, which he highlighted in his speech.

The renderings provided by him and his Chinese colleagues were not all successful and were later superseded<sup>81)</sup>, but they have to be considered innovative and fundamental from a methodological point of view. For a certain period of time, the lexicological solutions Fryer had already tried to provide personally through the publication *The Translator's Vade-mecum* itself had an influence on later glossaries, spreading through time and space<sup>82)</sup>. In Fryer's mind *The Translator's Vade-mecum* represented an answer to the necessity of homogeneity of technical and scientific nomenclature, as a collection of terms used and tried for his publications at the Jiangnan Arsenal<sup>83)</sup>.

Fryer's rich experience in the field made it an evident necessity to create uniformity, without regard to whom or to which institutions took part into this work. It is exactly this idea that Fryer restates numerous times in his speech and which he tried to place into practice with the publication of *The Translator's Vade-mecum*. From this point of view, Fryer can be considered a pioneer of standardization work; not only had he tried to provide solutions to the problem of uniformity of technical and scientific lexicon of Chinese, but also and even more importantly, he endeavored to pave the way for future work from a methodological point of view, as summed up in the speech analyzed.

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80) The results would still be disappointing, according to Fryer; refer to Fryer 1896, 157–158.

81) Refer to Elman 2014, 24–29.

82) Refer to Tola 2016 (2), paragraph 3.6.

83) The text was not only composed of terms coined by Fryer and his Chinese colleagues at the Jiangnan Arsenal; it included also lists provided by other translators and missionaries active in the field.

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