Pseudo Language and the Chinese Room Experiment: Ability to Communicate using a Specific Language without Understanding it

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Abstract

The ability to communicate in a specific language like Chinese typically indicates that the speaker understands the language. A counterexample to this belief is John Searle's Chinese room experiment. It has been shown in this experiment that in certain circumstances we can communicate with a Chinese speaker without intuitively acknowledging that the Chinese language is understood in the conversation. In the present paper, we aim to present another counterexample showing that, in certain circumstances, we can communicate using a specific language by converting its words to those of our natural language, and understand what is expressed using the language without understanding it. Using a specific conversion process introduced in the present paper, symbols and even sounds of a language like the Chinese language lose their original function and act as a tool to express one's natural language. To better understand this, imagine the English language has another writing or phonological system in addition to its current writing system.

Keywords: Chinese room, Natural language, Pseudo language, Language understanding, Artificial intelligence.

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Introduction

In the present paper, we aim to present a case other than the Chinese room experiment in which the subject can communicate using a specific language without understanding one word of it. The Chinese room experiment designed by John Searle challenges the possibility of strong artificial intelligence[2] in its computational form. This experiment was a counterexample to another experiment, called the Imitation Game designed by Alan Turing to establish a criterion for intelligence. In the first part of the present paper, the two experiments are described, and in the second part, the main implication of the Chinese room experiment for the present paper is outlined. The main implication of the Chinese room experiment for this paper lies not in its contention or its power to realize strong artificial intelligence but in its ability to outline a condition under which one can communicate in a specific language like Chinese without understanding one word of it, in a way that it cannot be detected even by a Chinese speaker.

In the example we describe, one can communicate in Chinese without understanding one word of it. The subject in our experiment - who is called Ms. K and will be introduced in the second part of the paper - knows by heart all the symbols, images, and letters in the Chinese language, and has matched every Chinese symbol with a word in her natural language. To understand Chinese, Ms. K quickly converts every word she sees to its equivalent in her natural language.

In the third part of the paper, the characteristics of Ms K's Chinese language and the conversion process that she uses are explained, and in the next section, it will be shown that the second language in some bilingual people has the same characteristics as the Ms K's Chinese language. This type of second language is called Pseudo language. The term 'Pseudo language' as the main idea of the present paper was adopted from the works of Behin Arbabi (2010a & 2010b). According to this idea, in certain circumstances, a second language can function as a tool or system (like a writing system) for one's natural language. In other words, a second language can function as one's natural language or as a written system for it. The type of second language is dependent on the relationship between

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[2] In most philosophical discussions on artificial intelligence, intelligence is what John Searle calls strong artificial intelligence that indicates that perception and cognitive states can be attributed to well-programmed computers (Searle, 1980: 471).

one's first and second languages. In the fifth part of the present paper, we will expand on this subject and explain why in certain circumstances, a second language does not act as one's natural language.

Finally, we will show that our experiment, despite its differences from the Chinese room experiment, can have implications for the possibility of strong artificial intelligence. Any language modelling dependent on the conversion of words and phrases and giving definite meanings to them is the modelling of a pseudo-language that can pass the Turing test while not being a natural language.

1- Searle Vs Turing: Game of Mind experiments

In his famous paper, 'Computing Machinery and Intelligence,' Alan Turing presented a mind game called 'The Imitation Game' to find a criterion for intelligence. He believed that every machine that could pass this experiment would have intelligence. In short, his experiment is like this: Imagine a person is interviewing a person and a machine at the same time, while each of these three are in a separate room. The goal of the experiment is for the interviewer to find out which room contains the machine and which room contains the person. The two rooms are distinguished from each other by labels showing X or Y. The machine must hide its identity and the person must help the interviewer in finding his identity.

Years later, John Searle (1980) designed a mind experiment, called the Chinese room experiment, to show that even if a machine convinces its questioner or human supervisor that it understands a language, it is not a convincing reason to believe that it has the ability to understand language. To understand the Chinese room experiment, imagine you, as a monolingual English speaker, are sitting in a large room with the door closed. In this room, there is a large collection of Chinese texts and another collection of Chinese letters. Now, imagine there is another collection consisting of rules in English showing one-by-one connections between symbols in the first and second collections. This collection does not tell us anything about the meaning of the Chinese words, and can only be used to connect one symbol to another. Here, you can understand the connections between the symbols only through their visual representation. Now, imagine a third collection of Chinese symbols together with a manual sent to the room. Using this manual, you can connect symbols from the third collection to the first and second collections, and this way, you can send out a specific collection of Chinese symbols that are detected by you just by their appearance. The first collection includes information for creating a story in Chinese, the second collection is the story itself, and the third

collection includes questions in Chinese that are known to you only through their appearance. Therefore, you can provide answers in Chinese to the questions. The collection of rules in English that were available to you, as the person in the room, can be called "the program."

In this experiment, the person in the room does not know Chinese at all, but after trying for a while, they can provide answers in Chinese that are logical to a Chinese person who is completely unaware of the experiment. Therefore, the unaware Chinese supervisor detects no difference between the answers of the person in the room and those of a Chinese speaker. It is logical to imagine that the person in the room understands Chinese.

By this mind experiment, Searle wanted to show that a well-programmed computer with a set of data as its memory to keep symbols, can have a performance similar to that of the person in the Chinese room. Such a computer can produce answers in Chinese without understanding one word of it. It can pass Turing's test only using formal or syntactic rules and by manipulating symbols using these rules. Such a machine can pass Turing's test without a bit of understanding. According to Searle, his experiment shows that meaning is something else other than grammar rules.

2. Chinese room and questioning the nature of language

The Chinese room experiment implies that we can imagine something that is successful in performing specific language functions while not understanding language. Imagine you encounter an imaginary creature that can talk like you, have a conversation with you, answer your questions, and make jokes. If you encounter such a creature, can you be sure that it understands the language it speaks?

One of the results of the Chinese room experiment is that we can imagine such a creature. In this experiment, a robot can be imagined that can answer all of our questions in Chinese and talk to us in Chinese, while not understanding the Chinese language. Here is another example: A person with an exceptional memory can memorize all the symbols and letters of the Chinese language along with a manual in their mother tongue to establish associations between the symbols and letters. This person who will be called Mr. Y in the rest of the paper, can have a successful communication with a Chinese speaker if he has access to proper instruction according to each specific situation. This can be imagined, however, we still intuitively believe that Mr. Y does not understand Chinese.

We can also imagine other cases where communication in a specific language is present, but understanding of the language is not attributed to the communicator. For example, imagine a zombie that can speak and communicate like humans, but we intuitively believe that it cannot understand the specific language it speaks. In other words, it does not have awareness of what it says and what it hears.

The example of a zombie may be controversial for some reasons. First of all, such a creature is impossible to exist (Dennett, 1995). Secondly, conscious awareness is not necessary for understanding the meaning of words and sentences. In other words, one may argue that zombies can understand the meaning of words, because they can, just like us, use words without the use of formal rules. Finally, it can be argued that if the zombie example works, it may not be as useful as the Chinese room example. We referred to this example here for two reasons: to give another example of the ability to communicate in a specific language without understanding it [3], and to show that such examples are not related to our discussion.

The main example presented in our paper is the case of Ms. K who is a monolingual Persian speaker with an exceptional memory. She can successfully communicate with Chinese speakers in Chinese, so that even Chinese speakers may not recognize that she does not understand Chinese at all.

Mr. Y should receive instructions on how to connect symbols he sees with those he has memorized, and can successfully communicate only when he receives proper instructions for each specific situation. Not only he does not understand Chinese, but also, he also has no understanding of the meaning of the symbols presented to him in a story or questions.

But Ms. K is different. She has matched every symbol in Chinese (words, or in some cases, proverbs or commonly-used sentences) to its equivalent in her mother tongue. She may not even know that the Chinese symbols are language symbols, but she quickly connects every symbol she sees to its equivalent in Persian[4].

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[3] If the Zombie example seems very controversial based on what was said, it can be ignored.

[4] As will be explained later in this paper, the Persian equivalent may even be part of the Chinese symbols memorized by Ms. K; in that case, no connection may be established. This is like the relationship between written and verbal language.

Imagine a crazy, evil neurologist has manipulated Ms. K's brain and matched every Chinese word with a word in Persian, while Ms. K does not know why as soon as she sees the symbols, she quickly remembers a word in her mother tongue or why strange symbols remind her of certain Persian words.

Imagine Ms. K reads a story in Chinese, quickly transforms the Chinses symbols into their equivalents in her mother tongue, and understands the story. She also sees responses related to the story, converts them to their equivalents in her mother tongue, and understands them too. Then, she converts her answers from her mother tongue into Chinese symbols. Therefore, from the viewpoint of a Chinese speaker, Ms. K understands Chinese, while we know intuitively that she does not understand Chinese.

3 Ms K's Chinese language vs her Persian language

Imagine that in an unexplainable way, Mr. Y knows how to select Chinese symbols to use in all conversations he will have in the future. In that case, both Mr. Y and Ms. K can communicate with Chinese speakers without experiencing any problems, and no Chinese speaker can tell the difference between the common Chinese language and the Chinese language they speak. Here, the question arises that if both Mr Y and Ms K can communicate in Chinese, while we intuitively know that they do not understand the language, then what language do they actually speak?

This question seems to be challenging when asked about Mr. Y, because he has no Chinese language at all, and only knows a collection of symbols and instructions on how to connect them to their equivalents in his mother tongue without knowing what they are about. If Mr. Y is told that these symbols are Chinese words, it does not make any difference, and he still will not understand Chinese, and Chinese symbols will be nothing to him other than symbols based on related instructions.

However we cannot be sure about the nature of Ms. K's language, and we cannot say for sure that she does not understand Chinese. Ms K's Chinese language is significantly different from that of Mr. Y. One of the most important differences is that when reading a story, Ms. K understands it, though this understanding occurs through converting words into their equivalents in her mother tongue. In contrast, Mr. Y does not understand a Chinese story. He has some understanding of Chinese symbols without knowing that they are actually Chinese words. Another difference is that Ms. K in contrast to Y, does not need instructions or what Searle (1980) calls a 'good

planning to connect symbols to each other' in order to answer questions about the story. Therefore, Ms. K's Chinese language is not merely a set of Chinese symbols connected to each other according to specific instructions, but it is very similar to the common Chinese language.

Despite the closeness between Ms K's Chinese and the common Chinese language, these two languages are still different, and this is why we do not attribute understanding of Chinese to a person who has only matched Chinese symbols with their equivalents in their mother tongue.

The first thing that comes to our mind is that Ms. K's Chinese language is some sort of a second language that she has learned strangely. She is more likely than a Chinese learner to successfully communicate in Chinese, but when a person has merely connected symbols of a language to their equivalents in their mother tongue, we intuitively do not believe that they understand the language. In fact, in the first look, knowing a language is more than just learning how to connect words from two different languages.

Imagine someone invents symbols and connects them to words in their mother tongue, so that each symbol is connected to a certain word, and that every time the person sees a symbol, it reminds them of a word in their mother tongue. Can we say that this person has invented a language? Of course not. Merely inventing symbols and connecting them to their equivalents in one's mother tongue is not creating a language, at least because these symbols are not related to each other, while a language like French functions like a system in which words are related to each other in certain ways.

However, it can be again argued that Ms. K's Chinese language is some sort of a second language or a so-called sub-coordinate second language. One of the most common classifications of bilingualism has been provided by D'Acierno (1990: 12-13) based on the works of Weinreich (1968). This classification distinguishes between three different types of bilingualism:

1- Compound bilingualism: The person has learned two languages in the same environment, and only knows one concept that can be presented using two different words. Here, the two languages have been learned in a parallel way, and the person knows that there is one concept and two different ways of verbal presentation.

2-   Coordinate bilingualism: in contrast to the previous one, in this type of bilingualism, the person has learned each language in a different environment. For example, one language has been learned at home and the other has been learned at school. Here, each word in each language has a unique meaning.

3-   Sub-coordinate bilingualism: the first language is dominant and the second language has been learned based on the first language. Here, the person learns the words of the second language through those of the dominant language, and the dominant language acts as a filter for the second language.[5]

The above classification has not been empirically supported (Cantone, 2007: 5), but the classification of bilingualism is an interesting idea. Ms. K's Chinese language is most similar to sub-coordinate bilingualism, but, in the present paper, we cannot certainly say that it lies in this category. Ms. K's Chinese language is not considered a language due to its certain characteristics, and if we believe that sub-coordinate bilingualism has the characteristics mentioned below, then this type of bilingualism may not be regarded as including two languages, because here, the second language does not considered a language at all.

As was mentioned in the introduction, the main idea of the present paper was adopted from a book titled, 'Pseudo language' by Behin Arbabi (2010b). In this book, Arbabi introduces some characteristics of Pseudo language; these can clarify the differences between Ms. K's Chinese language and the common Chinese language or her Persian language. Ms. K's Chinese language has the following attributes:

Each word is matched with another word. In other words, in the K's Chinese language, every symbol, as a Chinese word (or phrase), is matched with its equivalent in Persian, Persian or a Chinese speaker who speaks naturally have not matched their language to anything else. In other words, for a person to know a language, they don't need to fix the words and phrases of their mother tongue to anything else, whether lingual or non-lingual.

As a result of matching Chinese symbols with Persian words, all Chinese words have a definite meaning for Ms K. If we are asked about the meaning of the words 'Apple,' 'Water,' 'justice' etc. we cannot quickly provide a clear answer; we understand the words, but we need to think a while to explain their meaning. In other words, when we

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[5] This is only one of the several classifications of bilingualism. In order to find more information about other classifications, refer to Romaine, Suzanne. 1995. Bilingualism. (2nd edition) Oxford: Blackwell.

read or hear something in our natural language, we understand it as soon as we see or hear it, and we do not need definite equivalents for them to understand them. But if we ask Ms. K about the meaning of "正义", she quickly says "justice". The meaning and existence of "正义" is dependent on its fixed relationship with the Persian word "عدالت"[6]. Every Chinese word or phrase that she knows has a definite equivalent, while no word or phrase in her Persian language is like this.

This does not mean that we cannot find equivalents in our natural language, but the point is that we do not need to convert words to each other to understand our natural language, while Ms. K needs to automatically convert Chinese symbols to words in her natural language to understand them (See Arbabi, 2010a: 612-614). Therefore, words in the natural language have synonyms and equivalents that one may or may not know, but they do not have a definite meaning in themselves, while, all symbols in Ms. K's Chinese language, without exception, have a definite meaning that is nothing but their Persian equivalent.

Another difference between Ms. K's Chinese and Persian languages is that the words in her Chinese language are not related to each other at all. In other words, because the meaning and existence of the Chinese symbols memorized by Ms. K are dependent on their association with their Persian equivalents, any relationship between Chinese words is established through their Persian equivalents. Ms. K's first language acts as a filter for her Chinese language, and this means that every relationship between the Chinese words she has memorized is established through her first language. In a natural language, words are related to each other, sit together and, at a macro level, create a structure or system. For example, Ms. K knows that "红色的书" means "red book", but in her Chinese language, the two words "书" and "红色" are not related to each other at all. In fact, "书" and "红色" are converted to their Persian equivalents "کتاب (book)" and "قرمز (red)", the phrase "red book" is formed in Ms. K's natural language, and then she understands the Chinese phrase.

These are the most important differences between Ms. K's Chinese and Persian languages. They indicate that Ms. K's Chinese language cannot be a language like her Persian language. We must repeat that Ms. K does not

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[6] justice

understand Chinese, and does not have any contact with the natural Chinese language, however, she understands what Chinese speakers say and can communicate with them.

4- Ms. K in the real world

Is the case of Ms. K just an imaginary example that cannot be found in the real world? The present paper contends that the second language of many bilingual people, not every one of them, is similar to Ms. K's Chinese language. In other words, Ms. K's Chinese is not a strange language, but something that many people can have as their second language. For example, Arbabi (2010b: 35) writes: "Most adults who have learned a second language, have never read that language, but they read a language that they have created in the process of learning. A special language that is more or less similar to their mother tongue, not the second language itself." In the rest of the paper, we try to further clarify this issue.

As was mentioned previously, the most important attribute of Ms. K's Chinese is that it is matched with her natural language, i.e., Persian. This means that there is a one-sided relationship between the Chinese symbols she knows and her Persian language. To understand Chinese symbols, Ms. K needs to convert them into their equivalents in her mother tongue. Therefore, there is a conversion process that is present no matter how quickly she can convert Chinese symbols into their Persian equivalents.

This can also happen in the real world and can be tested using a few words. For example, an English speaker who does not know Persian at all, can see a few Persian words and connect them to their equivalents in English. After several attempts, if fixed associations are established between the words, every time the English speaker sees these Persian words, quickly remembers their English equivalents and understands them. This ability can even be shown using one word. Imagine an English speaker who every time sees "خانه", coverts it to its equivalent in their mother tongue, i.e. "Home," and understands it. After this association is fixed, the image of the word "خانه" is only present in the word "Home", and a definite association is established between "خانه" and "Home."

The second language for many people has the mentioned characteristics. That is words and sometimes phrases in their second language are understood through their first language. If those who have learned their second language this way are asked about the meaning of a word in their second language, they provide a definite definition

from their first language. They convert words of their second language to their equivalents in their first language and understand what they read or hear in their second language through their first language.

We do not claim that every person who speaks a second language has learned it this way. But we contend that, when there is an association based on conversion between one's first and second languages, and words of the second language are exact equivalents of the first language, then the second language is not a natural language, but it is something like Ms. K's Chinese. Behin Arbabi (2010b) calls this type of language "Pseudo language." From now on, we also use this term to refer to Ms. K's Chinese or a second language based on conversion.

Ms. K can properly communicate with Chinese speakers. In fact, with some extra effort, she can even read Chinese poems or compose a poem in Chinese, while he does not know Chinese and has only connected Chinese symbols to their Persian equivalents. Therefore, people with a Pseudo second language have learned it only through connecting its words to their equivalents in their first language. They have no problem communicating using their second language, but we know that similar to Ms K, they do not have a natural second language.

Every person who has learned a second language knows some equivalents from their first language for the words of their second language, but this does not mean that their second language is a pseudo-language. The most important aspect of a pseudo-language is an automatic and necessary relationship based on conversion between words of the second and first languages, because symbols and words of the second language have acquired their meaning only through their equivalents in the first language, and their existence as meaningful words is dependent on them. Therefore, in addition to the aforementioned attributes, words of a pseudo-language are converted to their equivalents in the first language through an automatic process. In the following, we try to explain the possible reasons for this automatic conversion.

As was said previously, some language learners speak a second language that is similar to Ms. K's Chinese. This is called pseudo language because while it can be used for communication, it cannot be regarded as natural language. The most important attribute of pseudo-language is that its symbols and words have been exactly matched with their equivalents in one's main language.

When we see or hear words or symbols of a language like Chinese that are completely unknown to us, we perceive them as meaningless images or sounds. If these words or symbols are given meaning, they cannot be

perceived as meaningless images or sounds anymore. You can test this by simply trying not to hear or see the words of your natural language as meaningful words. This is certainly not possible. We automatically and necessarily see and hear language words as language words. Jerry Fodor writes, in his book "The Modularity of Mind" (1986: 52-53):

"It is impossible not to hear a language sentence (in a language you know) as a language sentence … In a discussion of word recognition, Marslen-Wilson and Tyler (1981:327) maintain that "Even when people are asked to focus on phonetic properties of information, they are not able to avoid identification of words {…}. This means that the type of processing observed in word recognition is done through automatic processes that function spontaneously."

Therefore, we see language words as language words, spontaneously and automatically. It is also true for pseudo language. The only difference is that one can understand words of their main language without converting them to something else. However, symbols and words of the pseudo-language are converted to their equivalents in one's main language. In pseudo-language, words do not function as language words, and their existence is dependent on the words of another language. In other words, as with a main language, we understand a pseudo-language and we are not able to avoid understanding it, but we understand words of a main language without any conversion, while in the pseudo-language, words are understood after a conversion process is established.

It is clear that the speed of conversion is not important, that is one can become so capable of performing this task that one can convert words and understand them as soon as encountering them. In other words, the conversion skill may become so ingrained that no difference remains between one's main and pseudo languages in terms of understanding speed. But what makes a language a pseudo-language is the specific relationship between the first and second languages, not the speed of understanding. It is again emphasized that a second language is not always a pseudo-language. In other words, a second language is a pseudo-language only when there is a relationship based on automatic and spontaneous conversion between the first and second languages.

5. Nature of pseudo-language

As was pointed out before, Ms K can communicate using her Chinese language (as a pseudo-language) in a way that the listener thinks she knows Chinese. Ms K's Chinese language which is a pseudo-language is essentially different

from Mr. Y's language in that Mr. Y has only memorized some symbols and learned instructions on how to connect them to each other. In other words, the symbols memorized by Mr. Y lack language meaning, appear to him as a drawing, and he cannot understand a story or a written text in Chinese. In fact, Mr. K sees Chinese symbols as pictures and has no language relationship with them.

But Chinese symbols are meaningful to Ms. K who has a pseudo-Chinese language, because she understands their meaning by converting them to their equivalents in Persian. Ms. K understands written Chinese texts, not in the Chinese language but in her main language, i.e., Persian. We know that Mr. Y sees and understands Chinese words as pictures or a drawing, but Chinese words do not appear to Ms. K this way. Therefore, the question arises of what Ms. K's language really is.

We previously imagined that a crazy neurologist kidnapped Ms. K, and established a conversion process in her mind between her main language and some symbols she was not familiar with. A form of 100% conditioning occurs in Ms. K's brain so that, as soon as she sees a Chinese symbol, she remembers the proper equivalent in her mother tongue. This is not an arbitrary relationship dependent on Ms. K's decision. In other words, she cannot see and understand the symbols as pictures sometimes, and at other times see them as words of her mother tongue; this is a necessary relationship. Therefore, as it is impossible not to see words of the natural language as meaningful words (as pointed out by Fodor [1983]), the symbols in Ms K's Chinese language are not pictures anymore, but they are Chinese symbols with the content of Persian words.

Ms. K can write the symbols on paper, like symbols used by spies to communicate. Even if the evil neurologist has matched a different symbol to each specific word in Ms K' Chinese language, we cannot intuitively believe that she knows a new language. Because these symbols are meaningful only when they have a fixed association with Ms. K's main language. These symbols are never put together and are understood together only when each is converted to its equivalent in Ms. K's main language. Therefore, as we do not call the strange symbols used by spies for communication a new language, the symbols in Ms. K's Chinese language do not form a new language. If we match symbols with 10 words of a language, the symbols do not form a specific language, and if we do the same thing for a million symbols, still no specific language is formed. What is important is not the number of words matched with each other but the relationship between them.

The main function of the symbols in Ms. K's brain is similar to that of symbols used by spies for communication. In fact, they are like a device used to expand the scope of writing and expression of her main language. In other words, the symbols in Ms. K's Chinese language are like symbols used by spies in the form of a writing system. As if a new writing system has been added to her Persian language.

Imagine the unknown symbols added by the evil neurologist to Ms. K's brain are Chinese words. Knowing that these are words of a specific language does not make any difference in the nature of Ms. K's second language. In other words, as we did not consider the symbols added to Ms. K's brain a specific language when we were not aware that they were Chinese words, we still do not consider them a specific language after knowing that they are in fact Chinese words.

By speaking of a writing system rather than a language we mean that when reading a text in a pseudo-language, letters are not seen as pictures, but they are immediately and automatically converted to their equivalents in one's main language. Behin Arbabai (2010b: 45) has explained this issue (In Arbabi's explanation, English is the pseudo-language and Persian is the main language). He writes: "This process has been exactly as this: in the stage of learning, the word "کتاب" has been converted to the written and verbal symbol of "Book," therefore in every encounter with Book as a symbol, it is converted to the word "کتاب". Therefore, Book as a symbol is not the word Book but it is the word "کتاب".

This is also true for Ms. K's verbal Chinese. It would make no difference if Ms. K matched the same Chinese words to their equivalents in her main language, and used them for verbal communication with Chinese speakers. The only difference would be that here, verbal Chinese acts as a writing system for Persian.

In other words, the most important attribute of the Chinese symbols memorized by Ms K was that they had a fixed and necessary relationship based on conversion with their equivalents in her main language. It was because of this conversion-based relationship that we argued that her Chinese language, as a pseudo-language, functioned as a writing system. It, in fact, functions as a device for expanding her main language, i.e., Persian, and has no relationship with the original Chinese language, though she can communicate with Chinese speakers. If this conversion-based relationship is established between two sounds, that is if in learning a second language, the sounds of the language are converted to those of the first language, we again have a writing system. The only difference is

that this writing system is verbal not written. The sounds of a pseudo-language like Ms K's Chinese are converted to words of the main language as soon as they are heard, and then they are understood; in language production, this process is done in reverse order.

We can use a new written system (consisting of symbols other than the original ones) for a specific language, like English. This is like a writing system used by spies to communicate with each other. These new symbols that can include all words and sentences of the language do not form a new language, but they are a new device invented for communication in the English language. We can imagine that the same relationship is established with the new language in the verbal form, meaning that instead of written symbols, specific sounds are invented and used for each word of the main language. Knowing these new sounds does not imply knowing a new language. In our discussion of Ms K's language, pseudo-language, and symbols used by spies, we tried to argue that the new sounds can be from another language other than one's mother tongue and that we intuitively believe that they do not form a new language. When a second language is based on such a relationship between the first and second languages, we intuitively believe that we are faced not with a natural language but only a new device for expanding communication using the first language.

In summary, we believe that pseudo-language exists, and it, despite having written or vocal similarities with one's main language, is different from that, because words of a pseudo-language have fixed associations with those of another language, and a person with a pseudo-language needs to convert the words of the language in order to understand them; while words of a main language do not have any relationship with those of another language, have meanings in themselves, and their content is not dependent on that of another language. Now that we suppose that pseudo language exists, we can best explain it by considering it as a writing system. As an English speaker uses the English writing system, a person with a pseudo-language uses the writing system or even sounds of another language to express or understand their main language. A multilingual person who only has one main language (mother tongue) and their other languages are pseudo languages, only knows one main language, and this specific language has more written facilities than their other languages. But when there is no conversion-based relationship between one's first and second languages, the bilingual person knows two main languages.

6- Pseudo-language and artificial intelligence

Both Mr. Y who is the subject of the Chinese room experiment (if given proper guidance) and Ms. K who has matched all Chinese words with those of her mother tongue with the help of her incredible memory, can convince Chinese speakers that they understand Chinese, while we intuitively know that none of them knows Chinese. Therefore, both Ms. K and Mr. Y can properly pass the Turing imitation test without understanding the Chinese language.

The main point of the Chinese room experiment is that grammar or anything like that is not enough for knowing a language. Based on Searle's test, it can be easily concluded that Mr. Y does not know Chinese. It is also true for a machine designed to function as explained in the Chinese room experiment; we can expect that such a machine would not be able to develop any language understanding.

Mr Y does not understand anything from a Chinese story, but Ms K can understand the story and does not even need planning for each specific situation. The Ms. K example is more useful than the Mr. Y example because using this example it can be shown that although Chinese words are meaningful to Ms. K and she understands Chinese stories, we can still conclude that she does not understand Chinese. Mr. Y's example shows that meaning is not acquired through grammar rules, while Ms. K's example takes us a step further, and lets us say that understanding or knowing a language requires a specific language function for understanding that cannot be just conversion.

We know that in order to understand Chinese, Ms. K needs to know a language as her main language. This is also true for Mr. Y who needs to know a specific language in order to understand instructions. But the important point about Ms. K's Chinese pseudo language is that merely converting symbols of a language to those of another does not give us the ability to understand them and that these symbols are like a writing system, in that their existence is not because of their forms, but it is dependent on their conversion to language words.

It is clear that if a machine can understand a story using a pseudo-language, this shows that it somehow has a main language, and understanding can be attributed to it. Here, the main point is not the machine's ability to understand the story, but it is our approach to language modelling. If in language modelling, we only focus on conversion, try to match words and sentences with something else such as a binary code, and give definite meanings to words, the machine may be able to learn the language, but the language it will learn will not be like a human language.

In contrast to the Mr Y example, in the Ms K example, it is not claimed that a machine trying to understand a language can function exactly as Ms K do because Ms K must be able to convert her Chinese pseudo-language to her main language. In other words, in order to have the described pseudo-language, having a main language and some sort of understanding is required[7]. Language understanding is not a good indicator of whether or not a machine has language understanding, because we have already supposed that there must be a main language or some sort of understanding. The main implication of Ms K's example for language modelling is that language should not be seen as something that has a fixed relationship with something else and functions based on conversion.

### 7-Objections and answers

The first objection concerns conversion. When we claim that Chinese words are converted to their Persian equivalents, the question arises as to what the Chinese symbols themselves are. Now, whether the conversion speed is fast and unconscious or slow and conscious, were are faced with two issues. One concerns the Chinese symbols or sounds and the other is related to the sounds of the natural language (Persian). The question is that if the Chinese symbols and sounds are not those of the natural Chinese language, then what are they exactly? In addition, many of those who have learned a second language, as soon as encounter a word in their second language, intuitively understand it. Therefore, it cannot be intuitively acknowledged that when hearing a pseudo-language, the additional conversion process is consciously (or even unconsciously, because the speed of understanding may be the same for the first and second languages) present.

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[7] It is also true for the Mr. K example. It appears that some sort of understanding should be attributed to the whole Chinese room system, because Mr. Y should have a main English language to be able to understand the instructions. If we believe that a machine cannot understand instructions, and they can only be given to it by a programmer, we may conclude that there is no specific point in the whole Chinese room experiment. A machine is a system that does not understand anything or at least we suppose so, therefore, it does not understand Chinese. It can also be argued that in the Chinese room experiment, the human programmer is part of the system that has been ignored in the conclusion about the system or its description; this makes us believe that the Chinese room represents the whole system.

When Ms. K (or anyone who has the Chinese pseudo language) encounters the Chinese language, it is very possible that she understands it immediately and without any extra effort. Therefore, from the Phenomenological viewpoint, there may be no real difference between a natural and a pseudo-language. One reason for this is that pseudo language functions as a writing system. In fact, we see and understand a pseudo-language as a writing system the same way we see and understand our natural writing system. When we talk about the automatic conversion of Ms. K's Chinese language into her Persian language, we mean that Chinese symbols, not Chinese words, are converted into Persian words. Perhaps it is better to say that Ms. K has a Persian language with a verbal Chinese writing system, instead of talking about conscious or unconscious conversion. Pseudo-Chinese symbols are neither like (language) pictures nor like Chinese words, but they are like a writing system. This means that as the English writing system is lingual for an English speaker not just a bunch of meaningless pictures, Ms K's pseudo-Chinese is a language, but it only consists of symbols or sounds for her natural language or mother tongue.

For a better explanation, we can refer to examples provided by Arbabai (2010a: 616):

A: to be found

B: a ⌐○○⌐ has been found

C: a pair of eyeglasses has been found

In the B example, the picture of eyeglasses is read (or can be read) as the verbal written form of eyeglasses. The picture functions as a written symbol, while even without this writing context, the picture of eyeglasses has its meaning in itself. Here, no conversion is made between the picture and the sound of eyeglasses, but the picture of eyeglasses has replaced the written form of eyeglasses. As no conversion is made to understand the written word, the word eyeglasses exists in the picture of eyeglasses.

Therefore, when we talk about (automatic and necessary) conversion in the relationship between first and second (pseudo) languages, we mean that Ms K's pseudo-Chinese words are just like symbols (like the B example) containing words of the natural language and that the picture of eyeglasses is only a symbol like Ms. K's Chinese symbols.

One objection to our description of personal pseudo-language is that it ignores grammar. In other words, if Ms. K uses a manual of Chinese grammar in addition to the conversion process, then we can say that she understands Chinese. The main element of a language is grammar, but it is absent in the pseudo-language that is the main subject of our discussion. Many language learners learn their second language based on connecting words of the language to their equivalents in their first language, but they put words together and make sentences according to grammar rules of their second language that are different from those of their first language; this allows us to say that they understand the language.

We can observe that learning a second language in adults is very much dependent on grammar rules. On the other hand, in learning a natural language, especially in children, many aspects of language learning including learning the meaning of words (Pinker, 1987; 399) occur before learning grammar. In addition, we know that a speaker of a natural language does not pay conscious attention to grammar when using the language, and that grammar does not have an important role in the use of natural language. However, from the objector's perspective, the insignificant or hidden role of grammar in language learning does not imply that it does not have an important, constructive role in language; Therefore, the objection remains that we ignore the constructive role of grammar in language.

Our primary answer to this objection is that, as was pointed out before, words of the pseudo-language are filtered by those of the natural language, therefore they are not put together in a way that grammar can be discussed. In other words, a Chinese language like Ms. K's Chinese can be imagined; if Ms. K knows the whole Chinese language by heart and can use it properly, again her Chinese is not natural. All words and some phrases of Ms. K's Chinese are converted into their equivalents in Persian, and she can have an understanding of Chinese this way. In other words, whether or not she knows Chinese grammar rules, she has no understanding of the Chinese words she has memorized.

Imagine Ms. K has memorized words from an unknown language (we call it X) instead of Chinese, and each word of this unknown language has been exactly matched with a word in her main language, i.e. Persian. Suppose that the grammar of the language X is very similar to that of Persian. Now, when Ms K communicates using the language X, we can intuitively acknowledge that she understands it because there is no difference between Ms K's language X and her pseudo-Chinese language and she knows the grammar of the language X. However, she has no

understanding of the language, because she converts its words to their equivalents in Persian. Therefore, in contrast to what the objector believes, grammar does not have a determining role in what we described in the present paper.

Another objection could be that our description of pseudo-language is not realistic, because many learners of a second language have not matched words of their second language to those of their natural language, and can understand words and phrases of their second language without one-to-one correspondence between words of their two languages.

The main point of our discussion of pseudo-language or Ms. K's Chinese is the act of matching words of a second language to their equivalents in a first language. Sometimes for commonly-used phrases or idioms, matching does not occur in a word-by-word manner, but the whole phrase is matched with its equivalent in the first language. Therefore, a lack of word-by-word matching in commonly used phrases or idioms does not imply knowing a second language.

8-Conclusion

In the present paper, we showed that the mere ability to communicate using a specific language does not indicate that the person knows the language. One of the most important phenomenological aspects of language learning is understanding a language without needing to match its words and phrases with those of another language. In other words, words and phrases of the second language should be in themselves meaningful. But for some adult language learners, words and phrases of their first language are meaningful to them, but those of their second language are meaningful to them only through their natural language. Such language is called pseudo language. We introduced the case of Ms. K who has memorized all Chinese symbols and fixed each Chinese symbol with a word in her mother tongue. Therefore, to understand Chinese, she needs to convert each Chinese word or phrase into its equivalent in her main language. Ms. K has no understanding of the Chinese language, but she can mislead a Chinese speaker into thinking that she understands Chinese.

Knowing a pseudo-language depends on having a natural language. Therefore, a person or a machine with a pseudo-language must have had a natural language. But, knowing a pseudo-language should not prevent the learner from achieving the main goal of language learning. Knowing a specific language is not limited to knowing a symbol that is converted to something else. In fact, knowing a language is not just the ability to automatically convert words

of a second language to those of the first language or anything else, but it is, in fact, understanding the meaning of words and phrases themselves.

Therefore, there is a non-lingual performance here that can be used to understand a language; this non-lingual performance can help us develop a communication device based on the language we already know, instead of learning a new language. In other words, we can know the international English language or an international English verbal writing system. They can both be used for communication, but they are based on two different processes; in the natural language, there is the natural process of language understanding, while in the international verbal writing system, there is the non-lingual process of converting written symbols to words. Such a process may be useful when conducted by a machine, on condition that we know that we are faced with a non-lingual process, not a natural lingual process.

Therefore, if, one day, technology allows us to give all sentences of a specific language to a machine, or a machine can somehow reproduce all sentences of a language and communicate using them, it can understand the language only if the words of the language are in themselves meaningful, not just written symbols or pictures.

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