Ecological Characteristics of Information and Its Scientific Research [1]

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Abstract

- This paper **aims** to explore the ecological characteristics of information and its scientific research from various aspects. The **method** is: Firstly, it explores formal information including eight basic types, and then explores the essence of information involved the logic of position and order or sequence. Finally, it reveals the ecological characteristics of information ontology related to terminology framework and conceptual system, which is characterized by not only the ambiguity of formal semantics and formal information can be automatically identified and eliminated in the computer-aided information processing environment, but also the ambiguity of the content semantics and content information, can pass through language chessboard and knowledge chess game, with essential information and ontological information, to resolve ambiguity. The **result** is that the basic law of information and its existence is highlighted, and the social and ecological characteristics of information science research are embodied by macro models (ideas and methods) and micro models (Chinese chessboard and English chessboard). Its **significance** is information ecology and its supporting methodology, formalization and method system to obtain a new breakthrough, specifically for the classification of information phenomenon and attribution on the determination of its scientific basis, which is conducive to the timely identification and resolution of various ambiguities.

Keywords

- formal information
- essential information
- ontological information
- information ecology

1. Introduction

- This paper aims to explore ecological characteristics of information and its scientific research from various aspects.
- Grammatical information [1], semantic information[2] and pragmatic information[3] all can be further divided into content information[4] and formal information[5][6][7][8][9][10]. There is a very rich connotation [11] and extension [12] among them. It is not an exaggeration to call information ecology [13]. So how to recognize or to characterize them is the key to the ecological aspects of information. This paper uses the phenomenon of information [14], the nature or essence of information [15] and the ontology of information [16] as three basic perspectives to understand or to operate the three series of information ecology systematically.

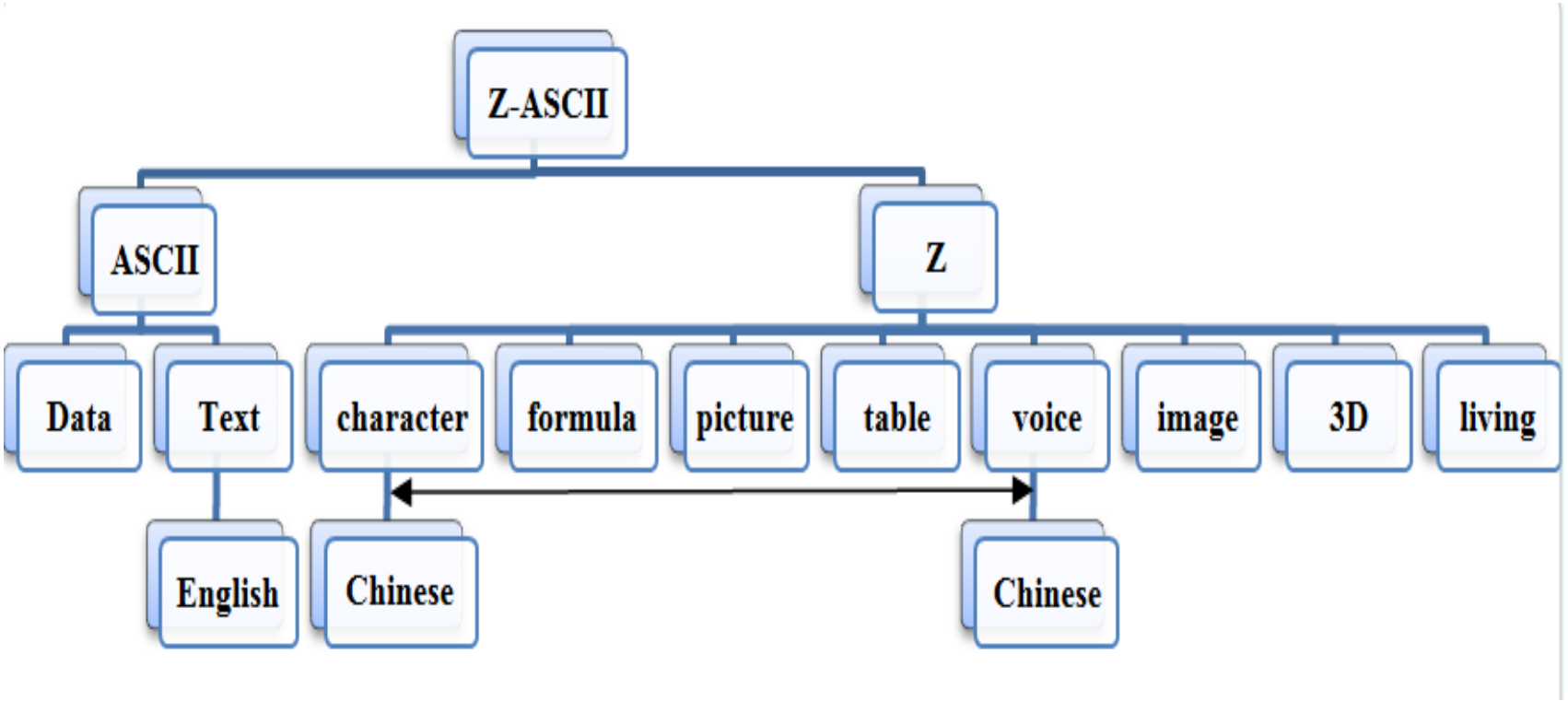
2. Materials or Knowledge Background

- **2.1. The prelude of formal informatics**
- If Tarski's division of object language and meta-language is the beginning of formal informatics, then Turing's calculation or computing of formal information with Shannon's Statistical Analysis of formal information is the sign of formal informatics.
- **2.2. The prelude of Content Informatics**
- If Feigenbaum's analysis or calculation of the content information is the beginning of content informatics as knowledge engineering, then Yixin Zhong's thinking systematically on the grammatical information, the semantic information and the pragmatic information is the content of information science to start. The question now is: how to resolve the ambiguities?

3. Methods

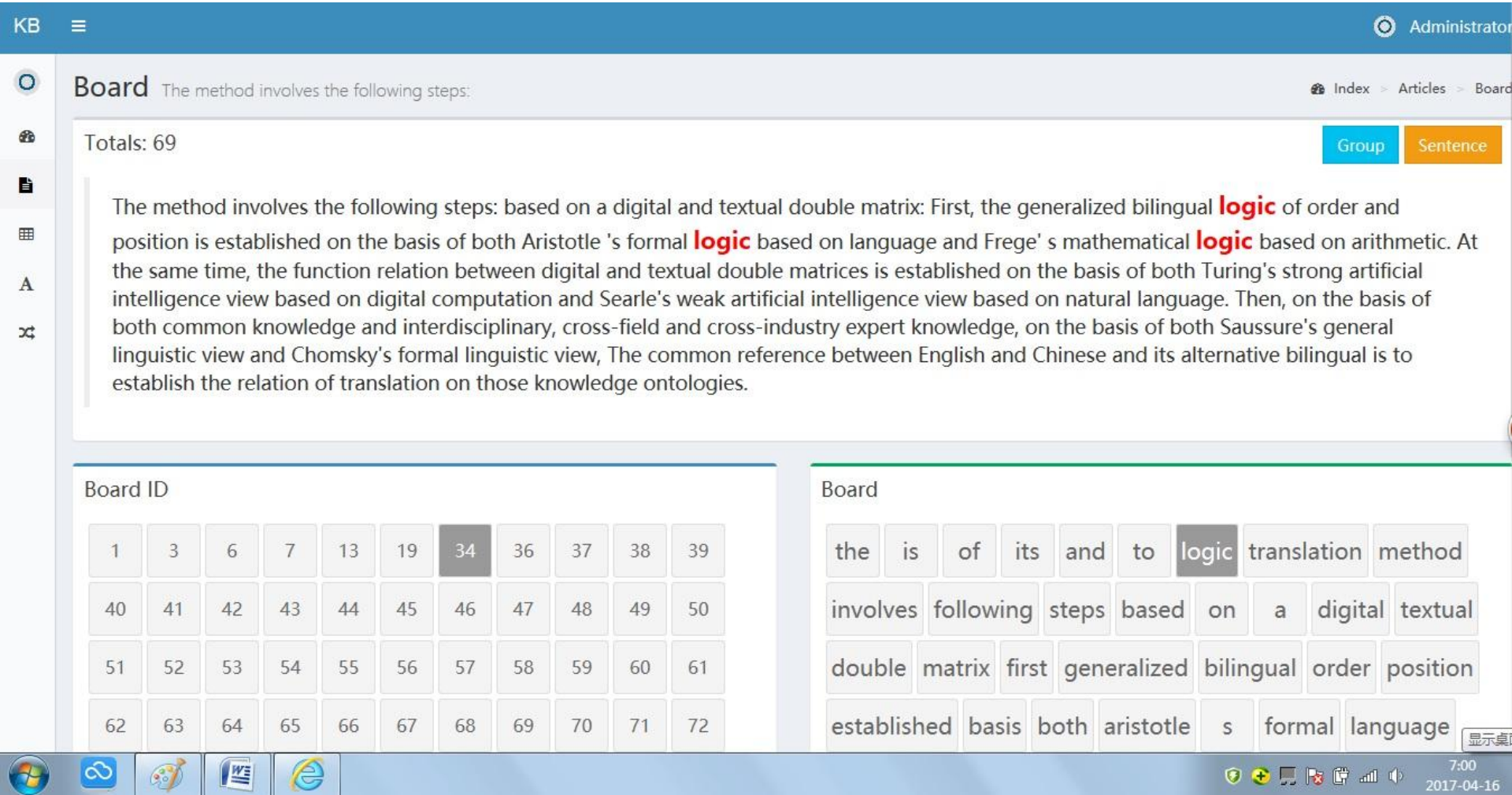
3.1. The Phenomenon of Information

- Figure 1 is our view of generalized text and its two standard systems



3.2. The Essence of Information

- Figure 2 is English formal information processing namely micro-chessboards as an example



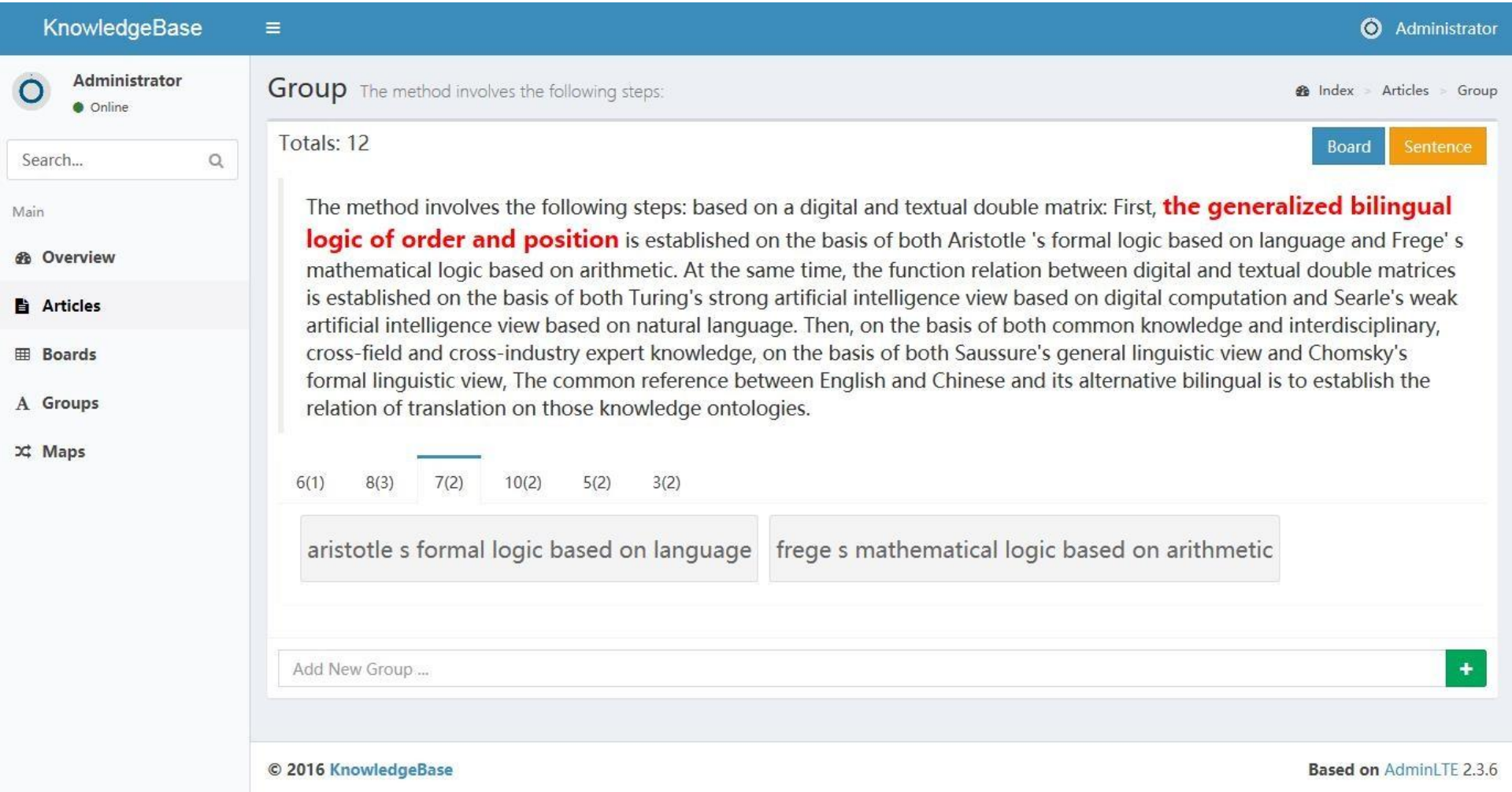
3.2. The Essence of Information

- Figure 3 is Chinese formal information processing namely mini-chessboards as an example

3. Methods

3. 3. The Ontology of Information

- Figure 4 is English information processing namely micro-knowledge chess-menu as an example

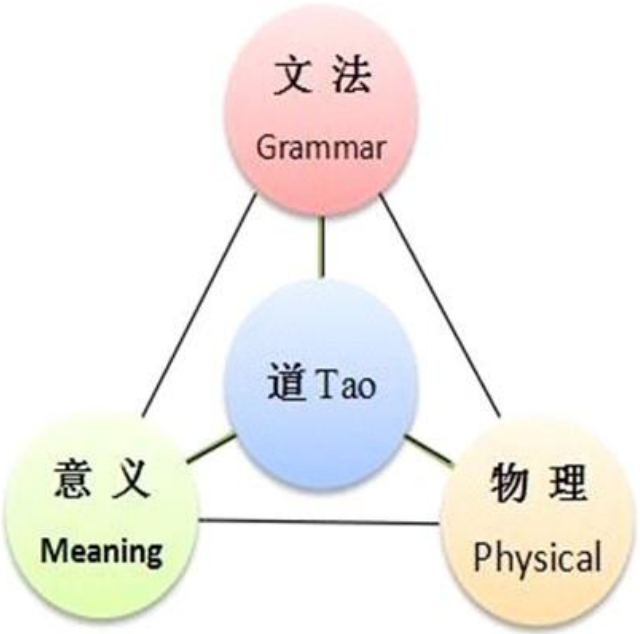


3. 3. The Ontology of Information

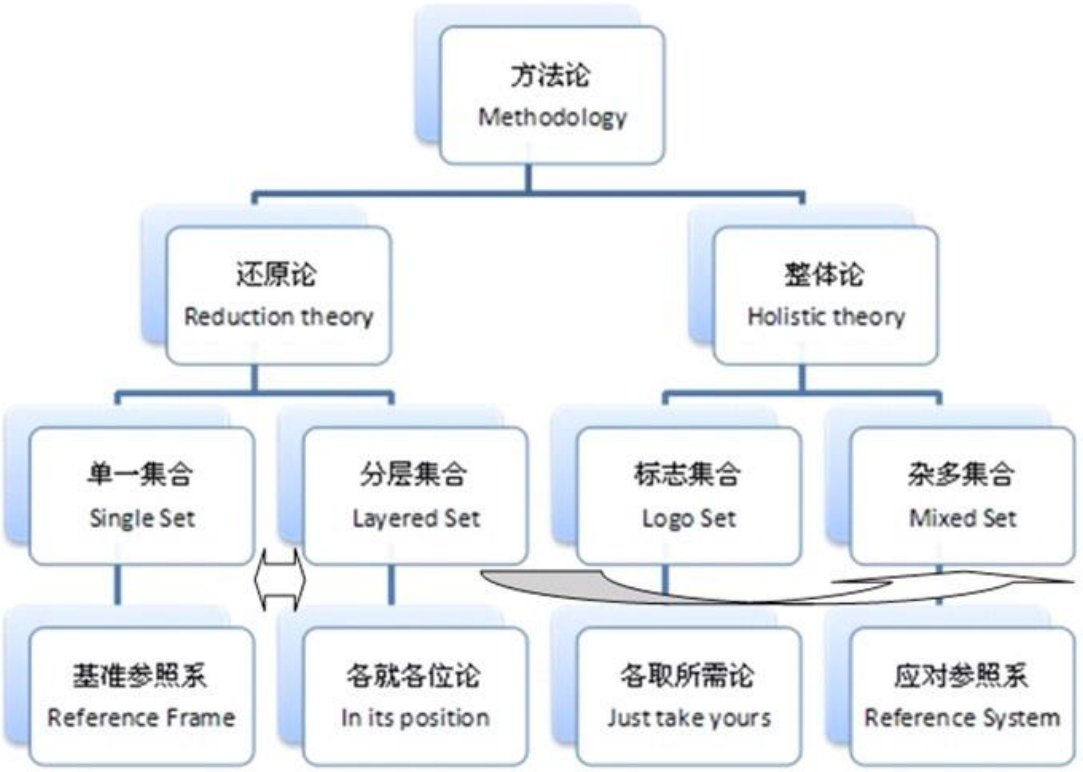
- Figure 5 is Chinese formal information processing namely micro-knowledge chess-menu as an example

4. Results

- Figure 6 are Basic models of ambiguity analysis:
- (a) model of basic views; (b) model of basic methods.



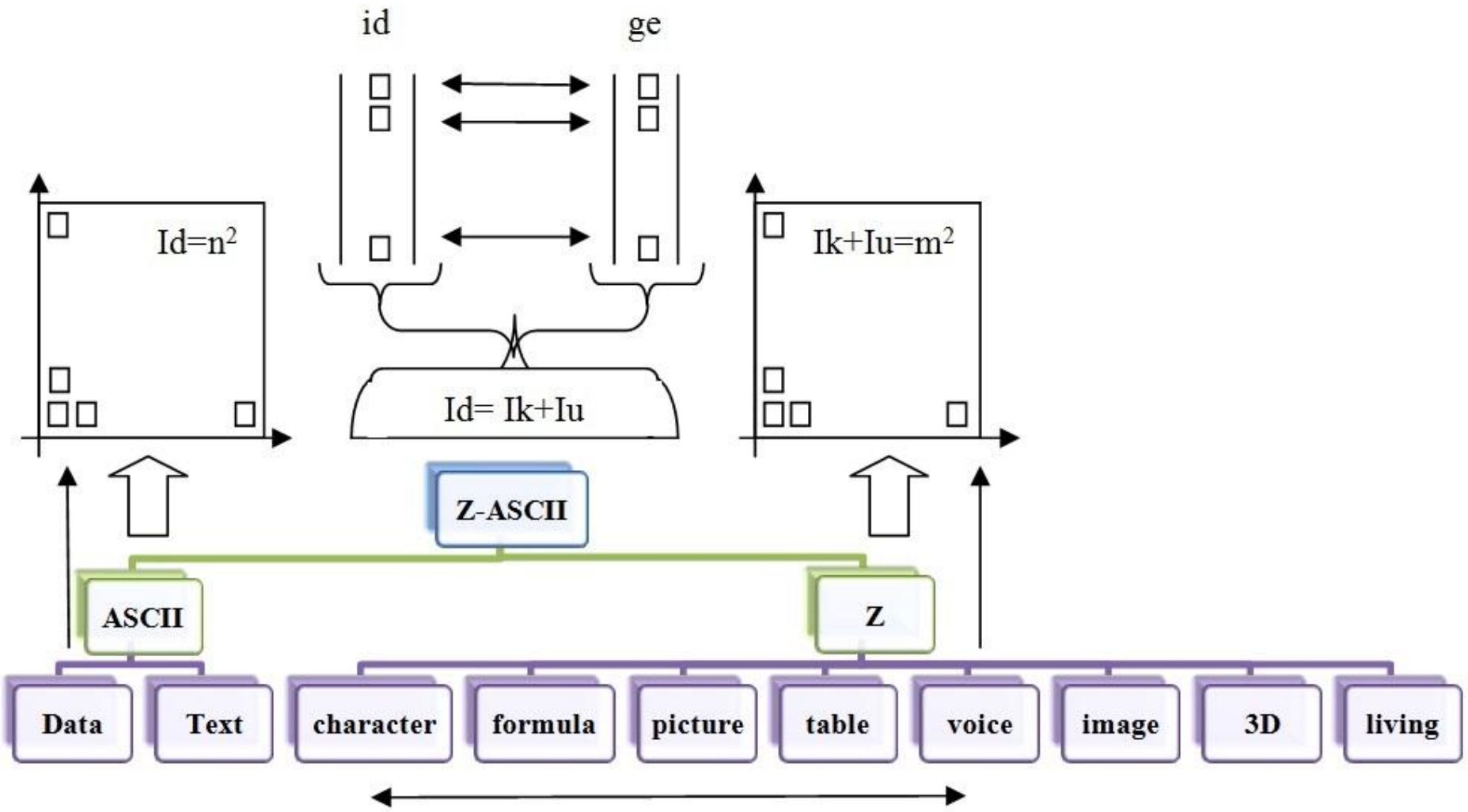
(a)



(b)

5. Discussion &6. Conclusions

- Figure 7 Shows three equations with twin chess-board based on Z-ASCII system



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Appendix

- Appendix A
  http://kben.koderx.com/article/3/board
  http://kben.koderx.com/article/3/group
  Appendix B
  http://kb2.sloud.cn/article/51/board
  http://kb2.sloud.cn/article/51/group

FUNDAMENTAL LAW OF INFORMATION: PROVED BY DOUBLE MATRICES ON NUMBERS AND CHARACTERS
https://aaas.confex.com/aaas/2017/poster/papers/viewonly.cgi?password=653376&username=20463

AAAS 2017 ANNUAL MEETING Abstract #20325

FUNDAMENTAL LAW OF INFORMATION: PROVED BY DOUBLE MATRICES ON NUMBERS AND CHARACTERS

AAAS Member: XiaoHui Zou, China University of Geosciences (Beijing)

The **purpose** of this paper is to prove **the basic law of information** in three verifiable ways: logic, mathematics and translation.


Aristotle


Frege


Turing


Searle Zou


Saussure


Zou Chomsky

The **method** involves the following steps: based on a digital and textual double matrix:
First, the generalized bilingual logic of order and position is established on the basis of both **Aristotle** 's formal logic based on language and **Frege**' s mathematical logic based on arithmetic. At the same time, the function relation between digital and textual double matrices is established on the basis of both **Turing**'s strong artificial intelligence view based on digital computation and **Searle**'s weak artificial intelligence view based on natural language. Then, on the basis of both common knowledge and interdisciplinary, cross-field and cross-industry expert knowledge, on the basis of both **Saussure**'s general linguistic view and **Chomsky**'s formal linguistic view,the common reference between English and Chinese and its alternative bilingual is to establish the relation of translation on those knowledge ontologies.
The **result** is that the three basic laws can be proved by digital and textual double matrix.Its **significance** lies in: quality, energy, information, three kinds of fundamental laws would be described systematically.

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FORMAL BILINGUAL CHESSBOARD SPECTRUM：SHOW THE OVERLAPPING BETWEEN LANGUAGE AND MIND
https://aaas.confex.com/aaas/2017/poster/papers/viewonly.cgi?password=379336&username=19708

AAAS 2017 ANNUAL MEETING Abstract #19708

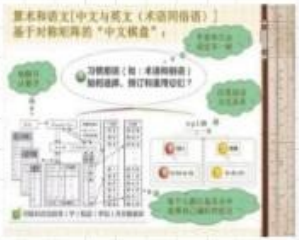
FORMAL BILINGUAL CHESSBOARD SPECTRUM：SHOW THE OVERLAPPING BETWEEN LANGUAGE AND MIND

AAAS Member：Shunpeng Zou，Advisor：XiaoHui Zou, China University of Geosciences (Beijing)

The purpose of this paper is to realize the human - computer interaction by using the Chinese character chessboard and Chinese language chessboard spectrum, to optimize the interpersonal communication, and to further reveal the formalized hub of human intelligence and artificial intelligence as well as its scientific principles.








The formal pivot was clearly combed out into dual approaches, five levels and seven milestones, in "Two Major Categories of Formalized Strategy", which has paved the road for the construction of human-computer interactive "digital bilingual chessboard spectrum,"the specific double matrix constructed by numbers and characters, it contained deep-seated scientific principles.

The result is:the basic implementation of its specific application will allow the teachers and students of liberal arts, science and engineering to understand and participate in the corresponding activities.

The significance is that from point to surface we can not only understand certain information, but can also put into action.The specific manifestations include a series of pilot projects and all aspects of application.

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