

Adapted from the Acknowledgments and the Conclusion

Rational human intelligence has preoccupied the author since the late 1990s, when he became acquainted with G. Boole's *Laws of Thought*. The resulting publications are listed in the present book. But for a long while, it was not clear to the author what he was doing: Cognitive Science? Logic? Mathematics? Philosophy? G. Boole seemed to think that he was doing mathematics. Then, in late 2012, it became evident to the present author that the theory of rational human intelligence is a theory of physics with its own mathematics. Much is owed to J. C. Maxwell in reaching this conclusion. The long road to J. C. Maxwell is described in the front matter. Later, in the summer of 2014, it became apparent that all of rational human intelligence developed in the brain through the exploitation of a single physical principle. J.-L. Lagrange likewise derives all of the physics of mass and motion from a single principle. Meanwhile, the present author's study of rational human intelligence had branched out into mathematics. When SCIRP proposed to publish the resulting mathematical articles together as a book, it seemed opportune to take stock of where the whole effort is at by describing the developments of 2012 and 2014 in the front matter of the book and describe the five digitalities that make up rational human intelligence in outline: Contrast Digitality, Selection Digitality, Nexus Digitality, Certification Digitality, and Supplement Digitality.

Rational human intelligence is the common platform on which all rational minds meet. It is like the operating system of a computer. When one walks up to another human being speaking the same language, one expects to be understood. And that in spite of all kinds of differences in terms of other types of intelligence, such as emotional intelligence, kinetic intelligence, musical intelligence, political intelligence, rhetorical intelligence, and so on. And that also in spite of all kinds of differences in terms of knowledge. Many people know little geometry and are still rationally intelligent. Rational human intelligence must be the same in all people. That is also why it is mathematical.

Efforts at promoting G. Boole's ideas on rational human intelligence may be a bit of an uphill battle. It is now generally assumed that G. Boole tried to explain how we think rationally and failed. The position taken by the present author is radically different. It is that G. Boole took us much of the way there. His theories would have been worth not one, but two, Nobel prizes in physics because they lay the foundation of how we think as rational human beings. Just as I. Newton described the mo-

tions of the celestial bodies in the universe, G. Boole described the motions of rational thought taking place in the brain, the most complex physical structure in the universe.

After some reflection, it was decided not to add any indexes to this work because any and all terms and concepts can be easily located by searching the Open Access electronic version of the book.

由致谢和结论部分改编

作者自 20 世纪 90 年代末阅读了乔治·布尔的《思维的规律》(1854 年版),便一发不可收拾地沉迷于人类推理智能的研究。本书所收的论文便是这些思考的结果。曾经有很长一段时间作者也不清楚自己所做的研究是什么,是认知科学?逻辑学?数学?还是哲学?布尔似乎认为他自己思考的问题属于数学。但是在 2012 年末作者清楚认识到人类推理智能的理论属于物理学及其所涉及的数学。得出此一结论很大程度上归功于麦克斯韦的启发。作者走向麦克斯韦的长路在本书前页部分有详细介绍。稍后,2014 年夏,作者清晰认识到,所有人类推理智能都是大脑利用唯一物理原理运作形成的。这一点与约瑟夫·路易斯·拉格朗日通过唯一原理推导出整个质量和运动的物理学相似。同时,作者目前的人类推理智能研究已经扩展到数学领域。当 SCIRP 提议将这些数学论文结集出版成一本书的时候,作者意识到似乎可以借机清查以前的全部工作(见前页里对 2012 年至 2014 年的思想进展情况的讲述)并概述人类推理智能所包含的五种数字机制(digitalities):对比数字机制(Contrast Digitality)、选择数字机制(Selection Digitality)、连接数字机制(Nexus Digitality)、确认数字机制(Certification Digitality)和补充数字机制(Supplement Digitality)。

人类推理智能是所有理智思考的共有平台,某种程度上可以将之比作电脑的

操作系统。当一个人遇到另一个人说同种语言的人的时候，期待被理解。这与其他各种智能(如情感智能、运动智能、音乐智能、政治智能、修辞智能等等)之间的差异无关，也与知识的差异无关。比如，几何学不属于人类理智智能，很多人对几何学知之甚少但有推理的才智。全人类的推理智能一定是一样的，也正因此它是数学的。

作者现在所做的在人类推理智能方面发扬布尔思想的努力或许是场艰苦的战斗，当今的一般认识是布尔试图解释我们是如何进行理性推理的，但失败了。作者所站的立场与此截然相反，认为正是布尔带领我们如此接近成功。布尔的理论配得上不止一个而是两个诺贝尔物理学奖，因为它是关于理性人类如何思考的理论基石。正如牛顿描述了宇宙中天体的运动一样，布尔描述了发生于宇宙中最复杂的物理结构——大脑——中的推理思想的运动。

**Prolegomena to the Complete
Physical and Mathematical Theory of
Rational Human Intelligence**

**人类推理智能的完整物理学和
数学理论之绪论**

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——布尔、拉格朗日和麦克斯韦模式**

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*At the Occasion of the Boole Bicentenary (1815-2015):
Remembering George Boole
(Lincoln, England, 2 November 1815-Ballintemple, County Cork, 8 December 1864)
and His American-Chinese Great Granddaughter, the Physicist Joan Hinton
(20 October 1921-near Beijing, 8 June 2010)*

时值布尔诞辰 200 周年
纪念乔治·布尔
(1815 年 11 月 2 日生于英格兰林肯, 1864 年 12 月 8 日逝于爱尔兰科克市宝林泰姆堡)
以及他的重孙女寒春
(旅华美国人, 1921 年 10 月 20 日生, 2010 年 6 月 8 日逝于北京近郊)

Moli Hua (茉莉花) "Jasmin Flower" Offered in Celebration



"In the Heavenly Kingdoms is the Saints' Abode" (Antiphon)

About the Front Cover

The Greek text is attributed to Heraclitus and translates as “War is the father of all,” “war” meaning more or less the contrast between opposites, between what something is and what it is not. The five persons depicted are Anaximander (top left), Heraclitus (top right), James Clerk Maxwell (bottom left), Joseph-Louis Lagrange (bottom right), and George Boole (center). Their selection is clarified in the front matter and elsewhere in this book. Evidently, it is not really known what Anaximander or Heraclitus looked like. In the background, as texture, is a view of the ruins of ancient Miletus, now in western Turkey, Anaximander’s hometown, generally regarded as the birthplace of Western philosophy. The following three images were acquired from www.shutterstock.com under the “Standard License” agreement: 1) Image ID No. 226881742 (“Greek Amphitheater in Miletus City with Honorary Seats and Columns”); 2) No. 88369543 (Maxwell); 3) No. 81841846 (Lagrange). The statement from Chapter 11 of Lao Tzu’s Tao Te Ching means, more or less, “We work with being but non-being is what we use.”

About the Back Cover

In the background is a view of the ruins of ancient Ephesus, now in western Turkey, Heraclitus’s hometown. The image was acquired from www.shutterstock.com under the “Standard License” agreement. It is No. 259978859 (“Theater and Arcadian Street (Harbor Street), Ephesus”).

About the Dedication Page

The text of the dedication song Moli Hua (茉莉花) “Jasmin Flower” is as follows, in Chinese and English:

<i>Haoyi duo meili di moli hua;</i>	“Here is a beautiful jasmine flower;
<i>Haoyi duo meili di moli hua.</i>	Here is a beautiful jasmine flower.
<i>Fenfang meili man zhiya,</i>	Perfumed blossoms fill the branch,
<i>You xiang you bai renren kua.</i>	Fragrant and white for everyone’s delight.
<i>Rang wo lai jiang ni zhai xia</i>	Let me come and pick a blossom
<i>Songgei bieren jia,</i>	To give to someone,
<i>Moli hua ya, moli hua.</i>	Jasmine flower, oh jasmine flower.”

The picture at the bottom of the previous page is a caricature of Giovanni Battista Pergolesi (1710-1736) by Leone Ghezzi, made in Rome in 1734. It is the only contemporary depiction of the composer. All other depictions are unreliable. The Italian text is as follows (reproduced with much help from Pergolesi’s biographer G. Radiciotti):

S(ignor) Pergolese compositore di Musica / Napoletano il quale è bravo assai et è / morto a Napoli il dì 8 febbraio 1736 / et era patito assai nella Gamba manca / che lo faceva andar zoppo.
“Mr. Pergolese, Neapolitan composer, who is very able, died on 8 February 1736, and suffered greatly from a malady in the leg, a handicap causing him to limp.”

Note that Pergolesi always signed his name “Pergolesi”—not “Pergolese” as the text states. He died on March 16, 1736—not February 8 as the text states. For more on Pergolesi, see pp. 146, 594-604. There are those of us who think that he may be the greatest composer ever; and his friend and older contemporary Leonardo Leo (1694-1744) maybe the second greatest.

The link is to an antiphon by Pergolesi, of which an autograph is extant at Naples. The text is as follows:

In coelestibus regnis sanctorum habitatio est. Et in eternum requies eorum. Alleluja.
“In the heavenly kingdoms is the saints’ abode. And forever shall be their repose. Hallelujah.”