Jifeng He at Oxford and Beyond: An Appreciation
未经审视的生活对于一个人来说是不值得过的
Jifeng He
Oxford University Computing Laboratory (1983–1998)
## Top ten papers on Scopus

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
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</thead>
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<tr>
<td>1.</td>
<td>Laws of programming</td>
<td>Tony Hoare, Ian Hayes, Jifeng He, Carroll Morgan, Bill Roscoe, Jeff Sanders, Ib Holm Sørensen, Michael Spivey, and Bernard Sufrin</td>
<td>1987</td>
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<td>2.</td>
<td>Data refinement refined = Resume</td>
<td>Jifeng He, Tony Hoare, and Jeff Sanders</td>
<td>1986</td>
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<td>4.</td>
<td>The rely-guarantee method for verifying shared variable concurrent programs</td>
<td>Qiwen Xu, Willem-Paul de Roever, and Jifeng He</td>
<td>1997</td>
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<td>5.</td>
<td>rCOS: A refinement calculus of object systems</td>
<td>Jifeng He, Xiaoshan Li, and Zhiming Liu</td>
<td>2006</td>
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<td>6.</td>
<td>Prespecification in data refinement</td>
<td>Tony Hoare, Jifeng He, and Jeff Sanders</td>
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<td>7.</td>
<td>A formal semantics of UML sequence diagram</td>
<td>Xiaoshan Li, Zhiming Liu, and Jifeng He</td>
<td>2004</td>
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<td>8.</td>
<td>The weakest prespecification</td>
<td>Tony Hoare and Jifeng He</td>
<td>1987</td>
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<td>9.</td>
<td>Normal form approach to compiler design</td>
<td>Tony Hoare, Jifeng He, and Augusto Sampaio</td>
<td>1993</td>
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<td>10.</td>
<td>A process algebraic framework for specification and validation of real-time systems</td>
<td>Adnan Sherif, Ana Cavalcanti, Jifeng He, and Augusto Sampaio</td>
<td>2010</td>
</tr>
</tbody>
</table>
Computing authors for five lab years.

Jifeng Jia, Nathan B, Sørensen, Morgan Bill, Tony Hao.

Laws of programming specific arbitrary data refinement law of programming compilation.

1986 1987
AN ALGEBRAIC APPROACH TO VERIFIABLE COMPIlING SPECIFICATION AND PROTOTYPEING OF THE PROCOS LEVEL 0 PROGRAMMING LANGUAGE

C.A.R. Hoare  He Jifeng  Jonathan Bowen  Paritosh Pandya

Oxford University Computing Laboratory
Programming Research Group
Oxford OX1 3QD
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Phone: 44-865-278889  Fax: 44-865-278839
E-mail: procos@prg.oxford.ac.uk

SUMMARY: A compiler is specified by a description of how each construct of the source language is translated into a sequence of object code instructions. The meaning of the object code is defined by an interpreter written in the source language itself. A proof that the compiler is correct must show that interpretation of the object code is at least good enough for any relevant purpose as the corresponding source program. The proof is conducted using standard techniques of data refinement. All the calculations are based on algebraic laws governing the source language. The theorems are expressed in a form close to a logic program, which may used as a compiler prototype, or a check on the results of a particular compilation. A subset of the occam programming language and the transporter instruction set are used to illustrate the approach. An advantage of the method is that it is possible to add new programming constructs without affecting existing development work.

1. Introduction

Compilation is specified as a relation between a source program p and the corresponding object code c. Further details of compilation are given by a symbol table Ψ, mapping the global identifiers of p to storage locations of the target machine. This compilation relation will be abbreviated as a predicate

\[ C(p, c, Ψ) \]

The internal structure of p, c and Ψ will be elaborated as the need arises.

Improvement is a relation between a product q and a product p that holds whenever any purpose the observable behaviour of q is as good as or better than that of p; precisely, if q satisfies every specification satisfied by p, and maybe more. For examples,
Time Interval Semantics and Implementation of a Real-Time Programming Language

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Thanks to ESPRIT BRA 3104 ProCoS project and UK IED SaferMOS project (IED3/1/1036).

The Acropolis, Athens, 1992
Towards a Provably Correct Hardware Implementation of Occam

He Jifeng*, Ian Page and Jonathan Bowen**

Oxford University Computing Laboratory, Programming Research Group
13 Keble Road, Oxford OX1 3QD, England
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Abstract. This paper shows how to compile a program written in a subset of Occam into a normal form suitable for further processing into a netlist of components which may be loaded into a Field-Programmable Gate Array (FPGA). A simple state-machine model is adopted for specifying the behaviour of a synchronous circuit where the observable includes the state of the control path and the data path of the circuit. We identify the behaviour of a circuit with a program consisting of a very restricted subset of Occam. Algebraic laws are used to facilitate the transformation from a program into a normal form. The compiling specification is presented as a set of theorems that must be proved correct with respect to these laws. A rapid prototype compiler in the form of a logic program may be implemented from these theorems.
Tony Hoare: “I must emphasise that all the effective research was conducted by Jifeng, who formalized the definitions, postulated the axioms, and proved the theorems. I enjoyed discussing the goal of research with him, and I wrote much of the English prose. But all of the new results were due to him.”

A Behavioral Model for Co-design
He Jifeng
May 1999
Jifeng He

He – Normal University Shanghai (2005–)

On 30 3 2007

In Office, September 2007
“2013年上海市教育功臣”
何积丰院士获奖词：

“他是上海高校第一位计算机领域的院士，开创了软件理论的国际学派，被誉为亚洲软件理论第一人。70岁的心系学生，推动本校软件教学改革，为学生四处奔波设立奖学金，教育出的人格健全。他就是华东师范大学何积丰院士。”
“He is the first Chinese academician in the field of computer science in Shanghai, has initiated an international school of software theory, and is acknowledged as a leader in Asian software theory. At the age of 70, he always cares about students, promotes the reform of undergraduate education and teaching, manages to organize awards and grants for students, teaches with a scientific attitude, and educates people with care.”
A New Roadmap for Linking Theories of Programming

He Jifeng
East China Normal University, China
June 2016
UTP 2016, Reykjavik – photographic memories
UTP 2016, Reykjavik — photographic memories
Speaking at the World AI Conference (WAIC) held in Shanghai, Sept. 2022. (Photograph supplied by Kelly He.)
He – honours
• Natural Natural(20 •)
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• Natural Natural(20 •)
• Natural Natural(20 •)
• Natural Natural(20 •)
Jifeng He

国家自然科学奖
证 书

为表彰国家自然科学奖获得者，特颁发此证书。

项目名称：设计严格安全软件的完备演算系统

奖励等级：二等奖

获奖者：何积丰（华东师范大学）

证书号：2002-Z-107-2-03-01
Jifeng He

University of York

Professor He Jifeng

on the seventeenth day of April 2010
Jifeng He
Jifeng He

Shanghai
Commemorative Blue Plaques (Oxford)

The Silent Traveller in Oxford
by Chiang Yee

Illustrated by the author with 12 coloured plates, 8 monochrome plates, and 70 line illustrations in the text.
3 Keble Road, Oxford

Professor
JAMES LEGGE
1815 - 1897
Missionary and Sinologist
Translator of the
Chinese classics
lived here
1876 - 1897
Oxford University Computing Laboratory (11 Keble Road)
Oxford University Computing Laboratory
(11 Keble Road)
Happy 80th birthday!
Jifeng He at Oxford and Beyond: An Appreciation