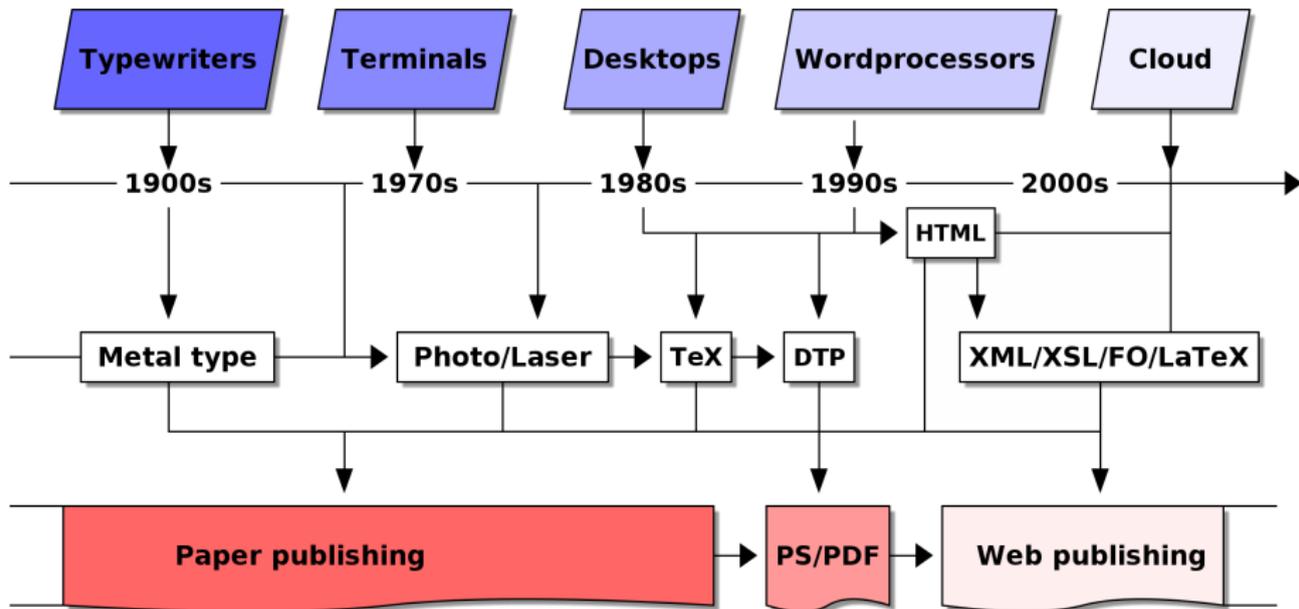


The age of the eJournal



The age of the eJournal

```
*****
*****
***
*** Vol. 1          January, 1985          Issue001 ***
*** Num. 1
***              NutWorks                ***
***              -----                ***
***              The Inter-Net Virtual Magazine for Those ***
***              Who Teeter on the Precipice of Insanity ***
***
*****
*****
```

== A B r i e f E d i t o r i a l ==

As was mentioned in a previous correspondence, "NutWorks" is a collection of essays, jokes, and other absolutely knee-slapping things. An attempt is made to find original works, but some things may appear that are either older than Moses's toes, or have flashed across every terminal from here to Barsoom. Repetition is very very good; maybe you'll like them better this time around.



UCC
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

The age of the eJournal

SOLSTICE:
AN ELECTRONIC JOURNAL OF GEOGRAPHY AND MATHEMATICS

SUMMER, 1993

Volume IV, Number 1
Institute of Mathematical Geography
Ann Arbor, Michigan

1

Summer, 1993

SOLSTICE
Founding Editor-in-Chief Sandra Lach Arlinghaus
EDITORIAL BOARD

Geography

Michael Goodchild, University of California, Santa Barbara.
Daniel A. Griffith, Syracuse University.
Jonathan D. Mayer, University of Washington; joint appointment in School of Medicine.
John D. Nystuen, University of Michigan (College of Architecture and Urban Planning).

Mathematics

William C. Arlinghaus, Lawrence Technological University.
Neal Brand, University of North Texas.

Kenneth H. Rosen, A. T. & T. Bell Laboratories

Engineering Applications

William D. Drake, University of Michigan.

Education

Frederick L. Goodman, University of Michigan.

Business

Robert F. Austin, Ph.D.

President, Austin Communications Education Services

The purpose of *Solstice* is to promote interaction between geography and mathematics. Articles in which elements of one discipline are used to shed light on the other are particularly sought. Also welcome are original contributions that are purely geographical or purely mathematical. These may be prefaced (by editor or author) with commentary suggesting directions that might lead toward the desired interaction. Individuals wishing to submit articles, either short or full-length, as well as contributions for regular features, should send them, in triplicate, directly to the Editor-in-Chief. Contributed articles will be refereed by geographers and/or mathematicians. Invited articles will be screened by suitable members of the editorial board. *IMaGe* is open to having authors suggest, and furnish material for, new regular features.

The opinions expressed are those of the authors, alone, and the authors alone are responsible for the accuracy of the facts in the articles.

Send all correspondence to: Institute of Mathematical Geography, 2790 Briarcliff, Ann Arbor, MI 48105-1429, (313) 761-1231, IMaGe@UMICHUM, Solstice@UMICHUM

Suggested form for citation. If standard referencing to the hardcopy in the *IMaGe* Monograph Series is not used (although we suggest that reference to that hardcopy be included along with reference to the e-mailed copy from which the hard copy is produced), then we suggest the following format for citation of the electronic copy. Article, author, publisher (*IMaGe*) - all the usual-plus a notation as to the time marked electronically, by the process of transmission, at the top of the recipients copy. Note when it was sent from Ann Arbor (date and time to the second) and when you received it (date and time to the second) and the field characters covered by the article (for example FC=21345 to FC=37462).

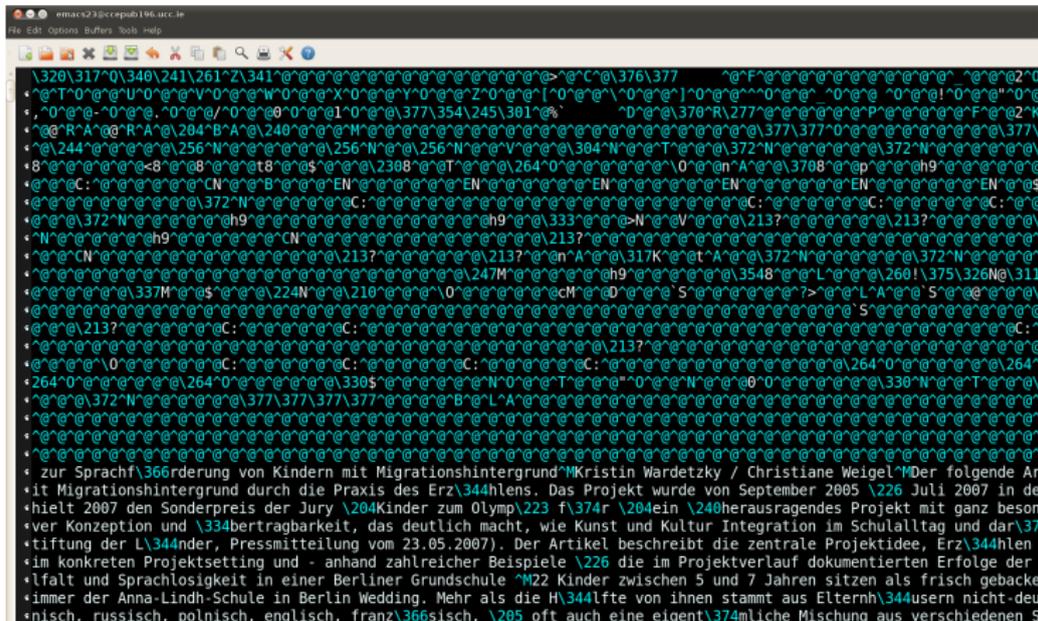
2



ucc

Coláiste na hOileácoláirí Corcaigh, Éire
University College Cork, Ireland

Arrival of the wordprocessor



Arrival of the typesetter

```
\documentclass[11pt,a4paper]{article}
\usepackage{scenario,hyperref}
\begin{document}
\selectlanguage{german}
\volume{2008}
\issue{2}
\lang{de}
\title{Sprachlos? Erzählen im interkulturellen Kontext}
\subtitle{Ein Projekt zur Sprachförderung von Kindern mit Migrationshintergrund}
\author{Kristin Wardetzky und Christiane Weigel}
\maketitle
\begin{abstract}
```

Der folgende Artikel beschreibt ein Projekt zur Sprachförderung von Kindern mit Migrationshintergrund durch die Praxis des Erzählens. Das Projekt wurde von September 2005 - Juli 2007 in der Anna-Lindh-Grundschule in Berlin Wedding durchgeführt und erhielt 2007 den Sonderpreis der Jury „Kinder zum Olymp“ für „ein herausragendes Projekt mit ganz besonderer Ausstrahlung, hoher künstlerischer Qualität, innovativer Konzeption und Übertragbarkeit, das deutlich macht, wie Kunst und Kultur Integration im Schulalltag und darüber hinaus nachhaltig befördern werden können“ (Kulturstiftung der Länder, Pressemitteilung vom 23.05.2007). Der Artikel beschreibt die zentrale



UCC

Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

Arrival of the Web

```
<html>
  <head>
    <link rel="stylesheet" href="scenario.css">
    <title>Sprachlos? Erzählen im interkulturellen Kontext</title>
  </head>
  </body>
  <h1>Sprachlos? Erzählen im interkulturellen Kontext</h1>
  <h2>Ein Projekt zur Sprachförderung von Kindern mit Migrationshintergrund</h2>
  <h3>Kristin Wardetzky und Christiane Weigel</h3>
  <h4>Abstract</h4>
```

<p>Der folgende Artikel beschreibt ein Projekt zur Sprachförderung von Kindern mit Migrationshintergrund durch die Praxis des Erzählens. Das Projekt wurde von September 2005 - Juli 2007 in der Anna-Lindh-Grundschule in Berlin Wedding durchgeführt und erhielt 2007 den Sonderpreis der Jury „Kinder zum Olymp“ für „ein ~herausragendes Projekt mit ganz besonderer Ausstrahlung, hoher künstlerischer Qualität, innovativer Konzeption und Übertragbarkeit, das deutlich macht, wie Kunst und Kultur Integration im Schulalltag und darüber hinaus nachhaltig befördern werden können“ (Kulturstiftung der Länder, Pressemitteilung vom 23.05.2007). Der Artikel beschreibt die zentrale



ucc
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

Arrival of the Web

TEST: Sprachlos? Erzählen im interkulturellen Kontext: Ein Projekt zur Sprachförderung von Kindern mit Migrationshintergrund

File Edit View Go Bookmarks Tools Tabs Help

Back Forward Stop Reload Home History Bookmarks Smaller Larger

http://publish.ucc.ie/scenario/2008/02/wardetzkyweigel/05/de Go

Scenário
ISSN 1649-8526
Jahrgang II
Ausgabe 2
Jahrgang 2008

Druckerfreundliche PDF

[Index der Artikel](#)

Inhalt

1. [Die Projektidee](#)
2. [Ergebnisse des Projektes](#)
3. [Zusammenfassung](#)
 - [Bildnachweis](#)
 - [Anmerk.](#)

001888

 **Scenário**
Sprache • Kultur • Literatur

Sprachlos? Erzählen im interkulturellen Kontext

Ein Projekt zur Sprachförderung von Kindern mit Migrationshintergrund

Kristin Wardetzky und Christiane Weigel

Zusammenfassung

Der folgende Artikel beschreibt ein Projekt zur Sprachförderung von Kindern mit Migrationshintergrund durch die Praxis des Erzählens. Das Projekt wurde von September 2005 - Juli 2007 in der Anna-Lindh-Grundschule in Berlin Wedding durchgeführt und erhielt 2007 den Sonderpreis der Jury „Kinder zum Olymp“ für „ein herausragendes Projekt mit ganz besonderer Ausstrahlung, hoher künstlerischer Qualität, innovativer Konzeption und Übertragbarkeit, das deutlich macht, wie Kunst und Kultur Integration im Schullalltag und darüber hinaus nachhaltig befördern werden können“ (Kulturstiftung der Länder, Pressemitteilung vom 23.05.2007). Der Artikel beschreibt die zentrale Projektidee, Erzählen als

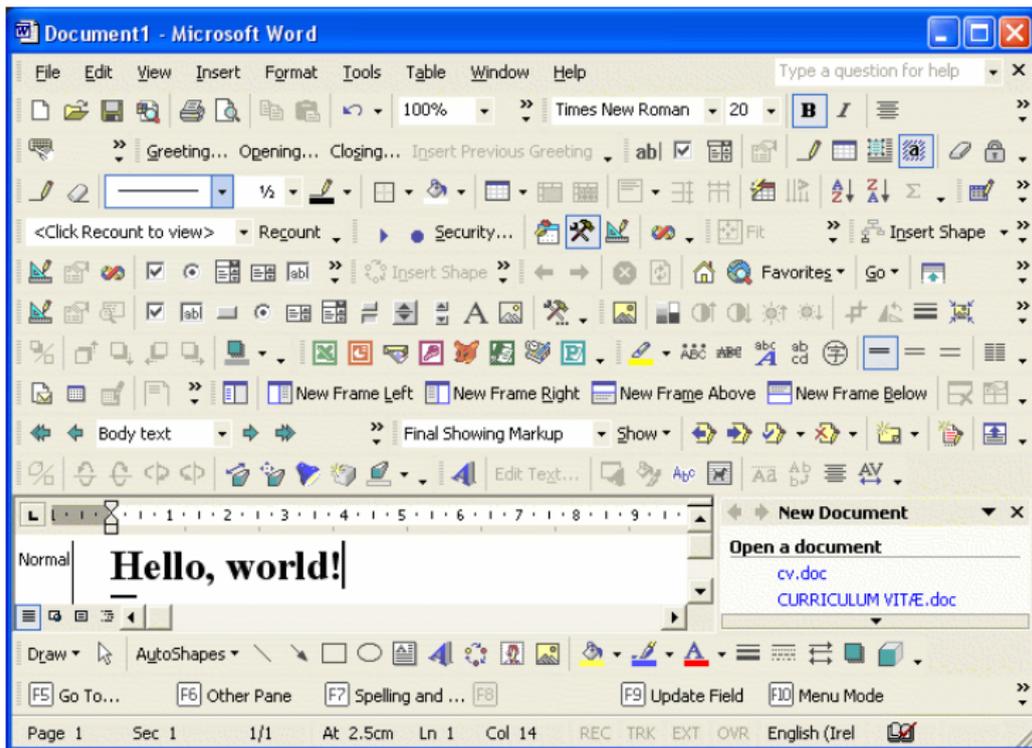
 **ucc**
Coláiste na hOileácolá Corcaigh, Éire
University College Cork, Ireland

What about the authors?



ucc
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

Authors don't learn to be typesetters



What about the editors?



What eJournals themselves can't teach

-  Finding authors and articles
-  Checking for tone, length, and depth
-  Proofreading
-  Figure and Table placement
-  References and citations
-  Corrections
-  Nit-picking
-  Consistency, consistency, consistency

What eJournals themselves can't teach



“Your x-ray showed a broken rib, but we fixed it with Photoshop.”



ucc

Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

Automated styles can help

The screenshot shows Microsoft Word 2010 with a document titled "14-Fogarty-2010-00-en.docx". The document content includes a title "Non-locality of two ultracold trapped atoms" in a blue serif font, an author "Thomás Fogarty", and an affiliation "Ultracold Quantum Gases Group, Physics Department, UCC". An epigraph by David Bohm is also present. The "Introduction" section begins with "Quantum mechanics is the physics of the very small and the very cold...". The Styles and Formatting task pane on the right shows the "Author + Bold, Not Italic, Au" style selected, with "Table Web 3" highlighted in the list of styles to apply.



Automation helps with consistency

The Boolean 2010: Non-locality of two ultracold trapped atoms (Thomas Fogarty , Ultracold Quantum Gases Group, Physics Department, UCC) - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://publish.ucc.ie/boolean/2010/00/Fogarty/14/en

UCC POPFile T4 T4 mail T4v7 RMS / CSS2 MySQL-Admin CUPS XE Clock Tweet Acronym Lookup Exp Test form DOI name

Disable Cookies CSS Images Information Miscellaneous Outline Resize Tools View Source Options

ucc home | site map | Site Feedback Home | Current Issue | Graduate Studies Office

 **The Boolean**
Snapshots of Doctoral Research at
University College Cork



The Boolean > 2010 > Non-locality of two ultracold trapped atoms

Cite this article: Thomas Fogarty , Non-locality of two ultracold trapped atoms , The Boolean, 2010, pp.72-76 EndNote BIBTeX MODS

Home **Non-locality of two ultracold trapped atoms**

Contents for current issue

PDF for this article

Resources for Authors

Editorial Board

2010

2011

Search

This volume

Search

Non-locality of two ultracold trapped atoms

Thomas Fogarty

Ultracold Quantum Gases Group, Physics Department, UCC

If the price of avoiding non-locality is to make an intuitive explanation impossible, one has to ask whether the cost is too great. (David Bohm)

Introduction

Quantum mechanics is the physics of the very small and the very cold. When particles are small and cold they take on wave properties and thus act differently to anything you can imagine in the world you see around you. Throwing tennis balls through brick walls, walking through two adjacent doors at the same time, even having a cat that is both dead and alive at the same time might seem weird to you, but in quantum mechanics this is quite normal. It is this strange playground of physics that has attracted people to quantum mechanics, and the advent of cold atom technologies allows us to, not only theoretically but physically, study these weird systems. In recent years, cold atoms have provided an excellent testbed for investigating these quantum effects. As the system is cold, it is incredibly clean and noise-free due to the lack of thermal vibrations and collisions with particles around it.

Quantum Entanglement

One of the most bizarre concepts of quantum mechanics is quantum entanglement. Entanglement was very controversial when it was discovered during the formulation of quantum mechanics and even today it still amazes and astounds physicists. At its heart it is quite simple: if we have two particles and they are entangled, we cannot know everything about one particle without knowing everything about its entangled partner. At first this may seem trivial, but in fact it is very powerful. For example, say I have two dice and I put them into a machine that creates entanglement. I then give one die each to two different people and I send them into two different rooms so that they cannot communicate with each other. I ask them to roll their dice and record the outcome of the dice roll. At the end of the exercise I take the two lists of the dice outcomes and I compare them. I find something astounding has happened, the two lists are exactly the same, if one person rolls a six then the other person rolls a six, if one person rolls a two then the other

Find: local Previous Next Highlight all Match case

http://publish.ucc.ie/boolean/pdf/2010/00/14-Fogarty-2010-00-en.pdf

Blocked: 0 of 2

 **ucc**
Coláiste na hOileáine Corcaigh, Éire
University College Cork, Ireland

Automation helps with consistency

Stephens of Doctoral Research
at University College Cork 2010



Non-locality of two ultracold trapped atoms

Thomás Fogarty

Ultracold Quantum Gases Group, Physics Department, UCC

If the price of avoiding non-locality is to make an intuitive explanation impossible, one has to ask whether the cost is too great. (David Bohm)

Introduction

Quantum mechanics is the physics of the very small and the very cold. When particles are small and cold they take on wave properties and thus act differently to anything you can imagine in the world you see around you. Throwing tennis balls through brick walls, walking through two adjacent doors at the same time, even having a cat that is both dead and alive at the same time might seem weird to you, but in quantum mechanics this is quite normal. It is this strange playground of physics that has attracted people to quantum mechanics, and the advent of cold atom technologies allows us to, not only theoretically but physically, study these weird systems. In recent years, cold atoms have provided an excellent testbed for investigating these quantum effects. As the system is cold, it is incredibly clean and noise-free due to the lack of thermal vibrations and collisions with particles around it.

Quantum Entanglement

One of the most bizarre concepts of quantum mechanics is quantum entanglement. Entanglement was very controversial when it was discovered during the formulation of quantum mechanics and even today it still amazes and astounds physicists. At its heart it is quite simple; if we have two particles and they are entangled, we cannot know everything about one particle without knowing everything about its entangled partner. At first this may seem trivial, but in fact it is very powerful. For example, say I have two dice and I put them into a machine that creates entanglement. I then give one die each to two different people and I send them into two different rooms so that they cannot communicate with each other. I ask them to roll their dice and record the outcome of the dice roll. At the end of the exercise I take the two lists of the dice outcomes and I compare them. I find something astounding has happened, the two lists are exactly the same, if one person rolls a six then the other person rolls a six, if one person rolls a two then the other person rolls a two, etc. This is strange as the outcome from rolling a dice is entirely random, yet each random throw of the dice results in the same number on both dice. As a result of the

Non-locality of two ultracold trapped atoms

THOMÁS FOGARTY

entanglement between the dice there are correlations in the "measurements" performed on each die. What is even stranger is that the distance between the dice does not matter; if one person was sitting in Cork with one of the entangled dice, and the other person was in a rocket going to Neptune, they would still roll the same outcome every time. Due to the entanglement, there is a connection between two particles no matter where these particles are and we can use this property in upcoming future technologies.

The potential of entanglement stretches far beyond playing dice. Current research in the area of quantum technologies revolves around exploiting quantum entanglement to ensure 100% secure communications. With classical communications a message is sent and is encoded with a random encryption key which both parties hold, and the resulting message is decoded using this key. However an eavesdropper can intercept and also receive this key and can attempt to break the code, hence uncovering the secret communication. However, by exploiting the strange effects of entanglement we can ensure secure communication. If Alice creates these entangled particles and keeps one half of the set and sends the other to Bob they can use these particles to send a private message. If an eavesdropper Eve intercepts Bob's entangled particle, and tries to send a duplicate atom to Bob, both Alice and Bob will be able to detect that someone is listening as the entanglement between Alice's particle and Bob's stolen particle will be broken. The transmission of the message is then stopped and no information has been stolen.

My Research

My research involves theoretically investigating whether entanglement is present between two atoms held by a harmonic trapping potential. A harmonic trap is a mathematical model that is a very good approximation of most traps made in experimental labs. The harmonic potential is a beautiful model in physics due to its simple solution and evenly spaced energy spectrum. The model I investigate has two atoms in separate harmonic traps. I can manipulate the system by changing the distance between these particles or tuning the interaction between these particles. By changing these parameters I can see how the entanglement would be affected if the particles are on top of each other or far away from each other, if they can interact or if they can't. What is particularly nice about this model is the fact that, unlike many problems in physics, it is mathematically solvable. This ensures that numerical techniques are not needed to solve the equation, eliminating the associated risk of introducing errors into the calculation.

To calculate the entanglement in this system I use a measurement, first formulated by Northern Irish physicist John Bell in 1964, that measures the non-locality between two particles. Non-locality is the direct influence of one object on another distant object, which is what happens between our entangled particles. So in this case non-locality implies entanglement. John Bell formulated an inequality which when calculated to be less

The Bookend is copyright © 2010 UCC

65



UCC

Coláiste na hOscóla Corcaigh, Éire
University College Cork, Ireland

Editors and Authors learn consistency

Basic styles (*=built-in)

*Title	*Header	Figure
*Subtitle	*Heading1	*Table
Author	*Heading2	*Caption
Affiliation	*Heading3	Reference
*Date	Appendix	Citation
Abstract	*ListBullet	*Footnote
Epigraph	*ListNumber	*Emphasis
EpiCite	*ListLabel	
*BlockQuote	*ListContinue	
BlockQuoteCite	*Normal	



Even George Boole could have done it

The screenshot shows a word processor window titled "Example document - Wordprocessor". The menu bar includes File, Edit, View, Insert, Format, Table, Tools, Window, and Help. The toolbar contains various icons for file operations and editing. The document content is as follows:

Series: Article

Title: **The Mathematical Analysis of Logic**

Subtitle: **Being an essay towards a calculus of deductive reasoning**

Author: George Boole

Affiliation: University College Cork

Epigraph: *Ἐπικοινωνοῦσι δὲ πᾶσαι αἱ ἐπιστῆμαι ἀλλήλαις κατὰ τὰ κοινά. Κοινὰ δὲ λέγω, οἷς χρῶνται ὡς ἐκ τούτων ἀποβεικνύοντες ἄλλ' ὅσ' περὶ ὧν βεικνύουσι, οὐδε ὃ βεικνύουσι.*

EpiCite: Aristotle, Anal. Post., lib. i. cap. xi.

Heading: **Preface**

Normal: In presenting this Work to public notice, I deem it not irrelevant to observe, that speculations similar to those which it records have, at different periods, occupied my thoughts. In the spring of the present year my attention was directed to the question then moved between Sir W. Hamilton and Professor De Morgan; and I was induced by the interest which it inspired, to resume the almost-forgotten thread of former inquiries. It appeared to me that, although Logic might be viewed with reference to the idea of quantity, it had also another and a deeper system of relations. If it was lawful to regard it from without, as connecting itself through the medium of Number with the intuitions of Space and Time, it was lawful also to regard it from within, as based upon facts of another order which have their abode in the constitution of the Mind. The results of this view, and of the inquiries which it suggested, are embodied in the following Treatise.

Footnote: * See p. 43.

Styles: Series, Title, Subtitle, Author, Affiliation, Epigraph, EpiCite, Heading, Normal, Abstract, Appendix, Bibliography, BlockQuote, BlockQuoteCite, Caption, Heading1, Heading2, Heading3, ListBullet, ListContinue, ListLabel, ListNumber, ListPara, Plain, Reference, Text, WebText, Citation, Footnote.



Much done; more to do

Teach editors how to spot broken stuff

- ✎ Handle bogus characters ($n \neq \eta$, $\beta \neq \text{B}...$)
- ✎ Distinguish ‘new paragraph’ from ‘new line’
- ✎ Understand WYSIWYM
- ✎ Help authors avoid novelty-hunting styles
- ✎ Improve References (and submit to CORA)
- ✎ Respond to social media linking

Thank you

 <http://research.ucc.ie/journals/>



ucc

Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland