



ISSN 2291-5079

Vol 4 / Issue 4 2017

# COSMOS + TAXIS

Studies in Emergent Order  
and Organization

Barry Smith  
an sich

A Festschrift in Honor of Barry Smith  
On the Occasion of his 65th Birthday

# COSMOS+TAXIS

Studies in Emergent Order and Organization

VOLUME 4 / ISSUE 4 2017



PHOTOS: COVER & PAGE 4  
Courtesy of Sandra G. Smith

## IN THIS ISSUE

- Social Orders: A Foreword from the Editors. . . . . 1  
*Gloria Zúñiga y Postigo and Gerald J. Erion*
- Biography of Barry Smith . . . . . 4  
*Sandra Smith*
- Briefly, on Brevity . . . . . 6  
*Gerald J. Erion*
- What Is It Like to Be Barry Smith? . . . . . 9  
*Wolfgang Grassl*
- BFO and DOLCE: So Far, So Close. . . . . 10  
*Nicola Guarino*
- Logic and Ontology. . . . . 19  
*John T. Kearns*
- On Not Being Influenced by Barry Smith's Ontologism. . . 25  
*Rudolf Lüthe*
- Minimal Aristotelian Ontology. . . . . 27  
*Luc Schneider*
- Barry Smith and His Influence On  
(Not Only, But Mainly My) Philosophy. . . . . 38  
*Peter Simons*
- The Liar, the Truth-Teller, and Barry Smith. . . . . 42  
*Wojciech Żelaniec*
- Necessity and Truth Makers . . . . . 49  
*Jan Woleński*
- The Church of Sunk Costs. . . . . 54  
*Gloria Zúñiga y Postigo*
- Trouble Up at t'Ontological Mill: An Inconclusive Dialog  
*A Whimsical Postscript in Ontological Folklore*. . . . . 62  
*Peter Simons*
- Appendix (*online only*): Publications by Barry Smith. . . . . 67
- Editorial Information. . . . . inside back cover

## EDITORIAL BOARDS

### HONORARY FOUNDING EDITORS

**Joaquin Fuster**  
University of California, Los Angeles

**David F. Hardwick\***  
University of British Columbia

**Lawrence Wai-Chung Lai**  
University of Hong Kong

**Frederick Turner**  
University of Texas at Dallas

### EDITORS

**David Emanuel Andersson\*** (*editor-in-chief*)  
Nottingham University Business School, China

**Laurent Dobuzinskis\*** (*deputy editor*)  
Simon Fraser University

**Leslie Marsh\*** (*managing editor*)  
University of British Columbia

**assistant managing editors:**

**Thomas Cheeseman**  
Dean Woodley Ball  
Alexander Hamilton Institute

**Mary Burns**  
Simon Fraser University

### CONSULTING EDITORS

**Corey Abel**  
Denver

**Thierry Aimar**  
Sciences Po Paris

**Nurit Alfasi**  
Ben Gurion University  
of the Negev

**Theodore Burczak**  
Denison University

**Per Bylund**  
Oklahoma State University

**Gene Callahan**  
Purchase College, State  
University of New York

**Chor-Yung Cheung**  
City University of Hong Kong

**Francesco Di Iorio**  
Nankai University, China

**Gus diZerega\***  
Taos, NM

**Péter Érdi**  
Kalamazoo College

**Evelyn Lechner Gick**  
Dartmouth College

**Peter Gordon**  
University of Southern California

**Lauren K. Hall\***  
Rochester Institute of Technology

**Sanford Ikeda**  
Purchase College, State University  
of New York

**Andrew Irvine**  
University of British Columbia

**Byron Kaldis**  
The Hellenic Open University

**Peter G. Klein**  
Baylor University

**Paul Lewis**  
King's College London

**Ted G. Lewis**  
Technology Assessment  
Group, Salinas, CA

**Joseph Isaac Lifshitz**  
The Shalem College

**Jacky Mallett**  
Reykjavik University

**Alberto Mingardi**  
Istituto Bruno Leoni

**Stefano Moroni**  
Milan Polytechnic

**Edmund Neill**  
New College of the  
Humanities

**Christian Onof**  
Imperial College London

**Mark Pennington**  
King's College London

**Jason Potts**  
Royal Melbourne Institute  
of Technology

**Don Ross**  
University of Cape Town and  
Georgia State University

**Virgil Storr**  
George Mason University

**Stephen Turner**  
University of South Florida

**Gloria Zúñiga y Postigo**  
Ashford University

\**Executive committee*

<http://cosmosandtaxi.org>

## Social Orders: A Foreword from the Editors

GLORIA ZÚÑIGA Y POSTIGO AND GERALD J. ERION

This collection of essays is dedicated to Barry Smith by his friends, some of whom are former students, and all of whom are admiring colleagues.<sup>1</sup> The goal of our Festschrift is to celebrate Barry Smith, an outstanding man who also happens to be a philosopher, a mathematician, and a scientist in biomedical informatics. It thus assembles contributions that are both personal in nature and intertwined with the deep ideas that Barry inspired or provoked in our respective lives.

Barry's extraordinarily creative and productive scholarship record (detailed in the bibliography at the end of this volume) marks an exemplary career that few scholars can match. Indeed, to learn of the full breadth of his work, one must search under such subject headings as Austrian philosophy, Austrian economics, phenomenology, Gestalt psychology, mereology, truth makers, states of affairs, apriorism, realism, social ontology, formal ontology, and applied ontologies, to name just a few. But those privileged to know Barry closely believe that his professional work, impressive as it is, pales in comparison to the personal impact he has had in our lives. This is the seed idea for our Festschrift, and we hope to provide here some significant testimony on Barry's impact as a colleague, mentor, teacher, and friend.

This does not mean, of course, that his impact has always produced a conversion to his ideas. Above all, Barry promotes and respects independent thought, and he encourages both students and colleagues alike to pursue the distinct intellectual directions that motivate each of us. To be sure, his encouragement will include a vigorous argument supporting his own views, always with humor and often in a venue with good food, good wine, and sometimes even good music, too. *This* is the man we wish to celebrate here. In doing so, we will share personal insights about Barry that we hope will present a fuller picture of the man revealed only in part by his scholarly writings.

Our motivation to organize and edit this Festschrift for Barry is also very personal. We are among those privileged to be former graduate students of his, and we forged our friendship around the profound delight of his seminars, which set our minds ablaze with questions and ideas. Not surprisingly, we both chose Barry to direct our respective dissertation projects. After reuniting again last year to organize this

Festschrift, we have enjoyed recalling fond memories of our time as graduate students at the University at Buffalo. We thought that in sharing some of these stories we could offer a glimpse of what it is like to be a student of Barry's for those who do not know his teaching. And we hope that as other students of Barry's read this—those who studied with him in the United Kingdom, Liechtenstein, and Germany, as well as former and present students of his in Buffalo—they will smile as they recognize situations that ring similar to ours.

Our Barryesque education began when we both registered for Barry's Cognitive Metaphysics course at the University at Buffalo in New York. As first-year graduate students, we privately wondered what the title of the course could even mean. We did not yet know to expect the unexpected, but we soon began an intellectual adventure with Barry that would last for the next five years. During this time, we enrolled in his seminars and tutorials on Cognitive Metaphysics (whatever that was), Austrian Philosophy, Husserl, Social Ontology, Philosophy of Social Science, Philosophy of Economics, Value Theory, Law and Ontology, Research Ethics, and Social Objects (from Meinong to Searle). We thus examined such a wide range of fascinating subjects that we were often tempted to change our dissertation topics, or even to remain students permanently.

With so much ground to cover, this was a time when sleep was reserved for semester breaks. Luckily, our graduate seminars were typically scheduled in the afternoon, perfect for the night-owl writing schedules that most students kept. One such afternoon, in a very warm classroom, Barry arrived in a stylish turtleneck and blazer. As he taught he seemed to be the only one in the room unaffected by the heat. One student, wiping sweat from her brow, asked him "Aren't you hot?" He replied, "No, I'm English."

Beneath this cool English appearance, however, lay the passionate heart of a philosopher with the unrelenting goal of directing us in a quest for truth, whatever the object of our examination. Students were drawn to his lectures in part because of his animated discussions with hilarious or shocking examples. For example, to explain the Husserlian notion of unfulfilled intentionality, Barry suggested the following. Suppose that you have the expectation of an apple pie fresh

from the oven, an expectation fueled by the aroma of baking apples and cinnamon. But then you discover, upon removing the pie from the oven, that it was instead: a dog pie! *That* is unfulfilled intentionality, explained in a way that cements the idea clearly in a student’s mind forever.

An integral part of studying with Barry was his boot-camp training in clear and precise thought as papers were written and re-written. He returned drafts with comments such as “not English,” “sloppy,” “sounds confused,” and “muddled thought.” He also insisted that we “write in plain and simple language,” “avoid bulbous sentences,” and “do, not, use, too, many, commas.” And in the especially long-winded passages all-too-common in philosophical writing, we would find: “bla, bla, bla” or “eh?” Some students might have been unsettled by such comments, but we appreciated their role in our development, and we also understood the English humor cleverly built into them to soften the blow. Even today, we both agree that we can hear his voice in our heads, still ghost editing as we write. This boot-camp training focused our efforts on articulating clearer arguments, transforming us into better writers and better thinkers. It also prepared us to confront disagreement comfortably, even eagerly, but also charitably. And these, of course, are some of the key practical benefits of studying philosophy.

Finally, we should remember that philosophy cannot be done in complete isolation, at least not all of the time. Indeed, it is fueled by conversation and dialogue with others. Barry recognizes this as well, and as evidence we offer the many wonderful parties to which Barry invited his students, former students, and colleagues at all stages of their lives and careers. Whether elegant garden parties, small dinner parties, casual get-togethers at the end of the semester, or even Thanksgiving gatherings, Barry was always a willing, gracious, and entertaining host. Beyond the great conversations, these moments were especially meaningful to us because they allowed us to see the carefree and joyful side of Barry’s personality. We hope that this Festschrift will, above all, bring out this carefree and joyful side again, for this is our party for you.

Happy Birthday, Barry!  
Gloria and Jerry



Photograph: Gloria Zúñiga y Postigo and Gerald J. Erion

## NOTES

- 1 We would like to thank the editors of COSMOS + TAXIS, Leslie Marsh and David Andersson, for their enthusiastic support of this Festschrift honoring Professor Barry Smith. Leslie and David immediately recognized our vision for this project's fitness within the journal's distinctive thematic frame of spontaneous orders. Of course, the study of spontaneous orders extends far beyond the walls of the university, and it is hardly limited to abstract academic discussion. Rather, spontaneous orders occur in our daily social experiences all the time—e.g., the ambiance of a café created by those who frequent it, or the many unintended effects of other people in our everyday lives. This special issue of COSMOS + TAXIS documents the latter. In fact, we could say that each of the contributions in this volume recounts one or more instances of spontaneous orders emerging from the author's interactions with Professor Barry Smith. But we prefer to say that the authors in this Festschrift will present unique stories about how knowing Barry has led them toward interesting paths and unexpected discoveries.

We are grateful also to Sandra Smith, Professor Barry Smith's wonderful wife, who wrote the distinctively evocative biography for this issue. She is not only an apt collaborator in Barry's work, but she has also proved to be a great accomplice in our secret plans to produce this Festschrift and to organize the ceremony at which we presented it.

We would like to express our special admiration for the indomitable spirit of Professor Wolfgang Grassl, who without hesitation accepted the task of writing a tribute for Barry that is now part of this Festschrift despite the serious medical challenges he has recently faced, and from which he is still recovering. His loving wife, Rebecca Proefrock, tells us that this tribute for his beloved friend Barry is his first writing since August 26, 2014. We are honored to have it as part of this volume.

Without our contributing authors, this project would not have been possible. Each met the challenges of time (a scarce good for all writers) with cheer, good will, and great affection for Barry. We are deeply indebted to them for their generous efforts, with the promise in re-

turn to respond in kind by producing a manuscript on short notice should there ever be such a need.

Great teaching can help students to appreciate philosophical ideas even as it fosters a willingness to question those ideas. By this criterion, and in our experience, Barry Smith is a truly great teacher, and part of a group of outstanding professors with whom we were fortunate to study at our respective universities. We would like to recognize these outstanding educators here as well. At the State University of New York at Geneseo, Jerry was profoundly influenced by Professors Stacey Edgar and Elias Savellos, who together helped to stoke his initial interest in philosophy and who continue to inspire him today. And at California State University, Professor Kurt Leube led Gloria's graduate examinations beyond the disciplinary boundaries of economics and into philosophy, changing the direction of her studies. Pursuing this new path at the University of California at Berkeley, Gloria had the privilege of being introduced to philosophy by Professor John Searle, who fueled her interest in social ontology. At Buffalo, Professor John Kearns proved a favorite not only because of his warmth and kindness, but because he is a fantastic teacher as well. He leads demanding logic seminars that are popular with students because of the life he infuses even into discussions of the most technical complexity, enriched with charming vignettes that add a personal dimension and make formal logic exciting. To each of these outstanding educators, and of course to Barry, we are grateful; they opened our eyes in different ways and thereby helped us to carve our individual paths in philosophy.

---

# Biography of Barry Smith

SANDRA SMITH

Email: SmithSandraG@gmail.com



The eldest of three children, Barry Smith was born on June 4, 1952 in Bury, England to Reg and Jean Smith. His early education began at a primary school in Chesham before transferring to Bolton Boys' School for the balance of his schooling. While growing up, he and his two sisters enjoyed family holidays to Southport, the Lake District, or camping in Cornwall each summer, but it was Barry's love of reading and his inquisitive mind that stand out most vividly amongst his childhood memories. While the other kids were off playing football or a game of rounders, it would not be unusual to find Barry surrounded by a stack of books in the library. It was this deep desire to learn from a very young age that would ultimately shape his future.

Barry's early interests focused greatly on pure mathematics, rather than applied mathematics or physics; he "enjoyed the possibilities for manipulating abstract structures which math provided." After expressing an interest to read for Oxford University's newly established joint degree in Mathematics and Philosophy, one of his grammar school teachers at Bolton lent him copies of Russell's *Introduction to Mathematical Philosophy* and Wittgenstein's *Tractatus*. He did not, at that stage, "have the foggiest idea about what studying philosophy might involve, but was immediately taken by *Tractatus*." It was this that in large part led to the notion—and to his ultimate decision—to enrol in Oxford University in 1970.

Prior to beginning his studies at Oxford, Barry spent 3 months hitching his way around Europe. In addition to picking up odd jobs along the way, his travels were funded by savings acquired from Saturday afternoon outings with his father, purchasing books from area second-hand bookshops and then reselling them for a profit to other used book stores down the road.

Upon receiving a First Class Honours Degree of BA in Mathematics and Philosophy from Oxford in 1973 (which was later converted to MA in 1977), Barry continued his studies at the University of Manchester. Under the supervision of Wolfe Mays, he successfully defended his dissertation titled *The Ontology of Reference: Studies in Logic and Phenomenology*, and was awarded a PhD in Philosophy in 1976.

From 1976 to 1994, Barry held appointments in the philosophy departments of the University of Sheffield, England (1976–1979), the University of Manchester, England (1979–1989) and the International Academy for Philosophy, Liechtenstein (1989–1994). In 1994 he moved to the United States and began teaching at the University at Buffalo, where he is currently SUNY Distinguished Professor and Julian Park Chair of Philosophy as well as an Affiliate Professor in the departments of Neurology, Computer Science and Engineering, Biomedical Informatics, and the university's Division of Biomedical Ontology. The latter, which he helped to found, is the first academic unit in the world with the word "ontology" in its title.

During his career, Smith has directed over 30 PhD dissertations, supervised more than 30 postdoctoral researchers, organized in excess of 130 workshops and conferences, collaborated with hundreds of individuals, delivered upwards of a thousand presentations at various department colloquia, professional meetings, and symposia, and formed scores and scores of professional bonds with people in a multitude of disciplines throughout the world.

Barry is a prominent contributor to both theoretical and applied research in ontology, a multidisciplinary field concerned with the creation of interoperability between information systems both within and between different organizations, and with the institutional and technical strate-

gies for achieving such interoperability. His pioneering work on the science of ontology led to the establishment of Basic Formal Ontology (BFO) as the most commonly adopted upper-level ontology development framework, used by over 200 ontology development groups. His work led also to the formation of the OBO (Open Biomedical Ontologies) Foundry, a suite of interoperable ontology modules designed to support information-driven research in biology and biomedicine. The methodology underlying BFO and the OBO Foundry is now being applied in a range of different domains, including military intelligence, defense logistics, industrial engineering, and sustainable development.

When asked to describe Barry, one of his colleagues replied, “There are people who work in applied philosophy, and then there is Barry Smith who applies philosophy to everything.” To Barry, philosophy is not a discipline, but a way of life.

Throughout the past 30+ years, Barry’s varied career has been filled with an overwhelming number of honors, accolades and accomplishments. To support his research, he has received combined funding in excess of \$13 million from a number of organizations including the National Institutes of Health, the US, Swiss, and Austrian National Science Foundations, the Humboldt and Volkswagen Foundations, the European Union, and the US Department of Defense. He is the author of some 500+ peer-reviewed publications, including 19 authored or edited books on ontology and related topics. To date, his publications have earned nearly 24,000 citations and a current h-index of 76. He served as editor of *The Monist: An International Quarterly Journal of General Philosophical Inquiry* for 25 years (from 1991 to 2016), and he is the Associate Editor of *Applied Ontology* and the *Journal of Biomedical Semantics*. In addition, he is a member of the Editorial Board of 22 other journals and 5 book series.

Since 2000 he has served as consultant to Hernando de Soto, Director of the Institute for Liberty and Democracy in Lima, Peru, on projects relating to the advancement of property and business rights among the poor in developing countries. Barry often tells the story of sitting in de Soto’s office when de Soto received a telephone call from former US president Bill Clinton. Explaining that he was in a meeting, de Soto told Clinton that “everyone should have their own personal ontologist.”

In recognition of his scientific achievements, Smith received a €2 million Wolfgang Paul Award of the Alexander von Humboldt Foundation in 2001. Utilizing this prize money, he founded the Institute for Formal Ontology and Medical Information Science (IFOMIS) in Leipzig, Germany. At the

time, this was the most valuable award ever given in the academic history of Germany. It also is believed to be the largest single prize ever awarded to a philosopher. In order to take advantage of the greater opportunities for cross-disciplinary collaboration at the forefront of information-based research, the Institute was relocated to Saarbrücken, Germany in 2004. Smith served as IFOMIS’ Director until 2006, and currently serves as its Scientific Director.

In 2005 Smith founded the National Center for Ontological Research (NCOR), under the auspices of which he initiated the Ontology for the Intelligence Community (OIC) annual conference series in 2006. (This conference has since been renamed Semantic Technology for Intelligence, Defense, and Security (STIDS).) Smith was also responsible for initiating the annual International Conference on Biomedical Ontology (ICBO) series in 2009.

Smith was awarded the first Paolo Bozzi Prize in Ontology from the University of Turin, Italy in 2011, and was elected Fellow of the American College of Medical Informatics (FACMI) in 2013.

The Best Schools, a leading resource for campus and online education, named Smith as one of the 50 most influential living philosophers in 2016. When interviewed shortly after receiving this recognition, Smith humbly said, “Most of my work now is in collaboration with people outside of philosophy...I sometimes tell people I’m not a philosopher anymore; I’m just an ontologist.”

Fluent in English and German (and able to speak French, Spanish and Italian “restaurant talk”), Barry’s invited speaking engagements throughout his career have spanned the globe. He has traveled to every continent sans Antarctica, has taught seminars in dozens of countries, and has delivered papers to the most diverse audiences. Whether addressing marine biologists at Oxford, plant scientists at the New York Botanical Gardens, the Space and Naval Warfare Systems Command (SPAWAR) in San Diego, the Department of Defense at the Pentagon, CIA agents at Langley, attendees of a vast number of conferences or members of various organizations such as the International Association for Dental Research, American Society of Mechanical Engineers, American Philosophical Association, and National Association of Scholars—to name just a few—Barry’s plate is overflowing. And he would want it no other way.

As Barry continues to rack up frequent flyer miles (which he is keeping in reserve should he ever decide to retire), he is enjoying the challenge of achieving the goal that he set out to accomplish more than 30 years ago: to change the world, one ontology at a time.

---

# Briefly, On Brevity

GERALD J. ERION

Division of Humanities  
Medaille College  
18 Agassiz Circle  
Buffalo NY 14214-2601  
USA

Email: gerald.j.erion@medaille.edu  
Web: www.medaille.edu/gerion

**Keywords:** Barry Smith, ontology, communication, digital media, brevity

---

## 1. INTRODUCTION

Barry Smith's reputation as a scholar is, of course, indisputable.<sup>1</sup> But in a Festschrift such as this, aimed at exploring and celebrating the remarkable *person* behind the remarkable scholar, we should also address a lesser known (yet no less significant) dimension of Barry's life and work: his teaching and mentoring.

I had the privilege of studying philosophy and ontology with Barry for several years at Buffalo, and I completed my Ph.D. under his supervision. In many, many ways, he is a stellar teacher and mentor, inspiring the kind of learning that has in turn shaped my own life and work. Through this short paper, and by my co-editor's special request, I will recount just one of the many deep and important insights that Barry offers to his students. Briefly then, let us consider his lessons on brevity.

## 2. THE OPPOSITE OF BREVITY

Now, philosophers and non-philosophers alike will know of our field's long-standing reputation for whatever might be the *opposite* of brevity.<sup>2</sup> One could even argue that this is philosophy's disciplinary bias. And so rather than seeking concision, we tend to *draw out*, through extended discussion, our philosophical analyses and arguments.

This can be a great thing, certainly; for as we often tell ourselves, the rest of the world seems predisposed to dispense with philosophical questions far too quickly. But our bias to verbosity also produces unfortunate communication barriers for those outside the field. Our colleagues, our students,

even our friends and family members cannot understand why we do not simply *get to the point*. For example, here is a passage that—forgive me!—I inflicted upon my own students earlier this term, courtesy of the German philosopher Immanuel Kant (1724–1804).

The practical imperative will therefore be the following: Act in such a way that you treat humanity, whether in your own person or in the person of another, always at the same time as an end and never simply as a means. (Kant, 1785/1993, p. 429)

Kant, for sure, is trying to capture complex ideas with his words here, and the situation is further complicated by the translation to English from the original German. But if this is the type of sentence that philosophers compose when given free range to express our ideas, then we can see why our colleagues, students, and others might find our work inaccessible.

## 3. BREVITY

But for as long as I have known him, Barry has seemed unaffected by this philosopher's bias, exhibiting instead a kind of logical elegance in his work. From our very first meeting, my admissions interview at Buffalo, I was struck by the remarkable clarity of his thinking and speaking. Cutting to the chase, he asked me almost immediately what dissertation topic I planned to pursue. Caught off guard with no clear answer yet myself, I bumbled through something about cognitive science and ethics, my principal research interests at



the time. Barry kindly helped to straighten out my response, simultaneously demonstrating both the value of brevity and the excellence of his teaching. After a few more minutes of cheerful conversation, I think that we both sensed what was inevitable: I would eventually be writing an ontology dissertation with him.

In the years that followed I took every seminar Barry offered. When that was not enough, I loaded up on a series of tutorials to which he graciously consented. By the time I was ABD, I was even auditing his undergraduate classes, looking for (and finding) ways in which I could improve my own teaching. Barry's classroom performances were brilliant, but there would be many more office-hour discussions as well, each one as warm, effective, and efficient as the first. In my heart, I worried that Barry was too busy for this, with too many other, more important projects and colleagues and students. And yet he always found time to answer my silly questions and keep me on track, and always with his characteristic brevity, clarity, and good cheer.

Barry's feedback on seminar papers also reflected and reinforced these important lessons. Looking back through the pieces I asked him to read, I can cringe at my weak arguments and dreary prose. And yet Barry ploughed through it all, providing smart suggestions that helped to turn my first drafts into my first publications. Long-winded sections would be flagged for revision: "bla bla," or "yeah yeah, get on with it." Weak arguments? "Assertion is cheap." General disorder? "Sounds confused," "sloppy," or simply "doesn't make sense." Sure, it stung a bit, but his spirit was kind and supportive, and *he was always right*. So, Barry's concise notes never failed to make my papers better, my arguments tighter and stronger. As a newcomer to philosophy, I could not have asked for a more patient and helpful reader, and to this day I still find myself recalling his wise advice.

These themes extended, in noteworthy ways, to the online world as well. During my studies at Buffalo each of Barry's seminars featured a concurrent email discussion list, which allowed students to continue our conversations between class meetings. The pace here was often frantic, and our contributions (like our paper drafts) were often rambling and confused. And yet Barry somehow kept up with everything, correcting us with one-line replies that he crafted when he probably should have been sleeping. It was, again, an impressive demonstration, and one that he continues to perform when I pester him with correspondence today.

Eventually, I came to see how fundamental these logic and communication lessons could be, and how widely we could apply them. Barry's most powerful papers and presentations,

for instance, are remarkable examples of clarity and brevity. Indeed, his unique brand of ontology would probably be impossible for the more typical philosopher who is challenged to connect with those outside the field. For Barry, brevity provides a clear link to others, and to other academic disciplines. And thus, the principles of ontology, like the principles of logic and good writing, become very useful in a very wide range of applications. Barry himself has used them to make significant contributions to biology, computer science, geography, legal studies, and medicine (among other fields). But we can also use them (as I have) to study ethics, human communication, and urban design and planning, and we can apply them to curriculum development projects, grant proposals, job applications, and so on. An appreciation for brevity is, then, a remarkable gift that Barry's teaching helps to inspire for his students.

#### 4. BREVITY AND THE DIGITAL MEDIA ENVIRONMENT

Finally, we should recognize that Barry's lessons are especially useful in the digital world, a space that can pose particular challenges to philosophers. Nearly all of us now live and work in a digital media environment that encourages—and in some cases requires—brief messages in a wide variety of forms. Brevity may in fact be a key feature of electronic media, demonstrated first by the terse text typical of the electrical telegraph. (Postman, 1985, pp. 64–71; Wills, 1992, pp. 169–175) But in the digital age, we place an especially high value on brevity in all kinds of content.

Thus, the language of social media (for instance) is often restricted in length, whether for technical reasons or simply through user expectation and convention. Some social platforms dispense with language entirely, focusing instead on visual imagery, even imagery that is by its very design temporary and ephemeral. These forces now shape our non-digital exchanges as well; at a recent conference I found myself giving a talk in the Japanese pecha kucha format, where 20 slides automatically advance every 20 seconds for a total runtime of just 6 minutes, 40 seconds. American communication theorist Neil Postman (1931–2003), describing television's electronic media environment, calls such a space "a peek-a-boo world, where now this event, now that, pops into view for a moment, then vanishes again." (Postman, 1985, pp. 77) The "peek-a-boo" character that Postman sees in television is even clearer today in cases of (say) SMS text messaging or Twitter.

Philosophers, with our bias to verbosity, may be especially ill suited for such a media environment. If we tend to *extend* discussion with careful, thoughtful language, our analyses and arguments can lose their impact in the world of digital peek-a-boo. But Barry’s lessons about clarity and brevity can help to solve this problem. Indeed, from his papers and presentations to his editorial notes to his late-night email messages, he provides models of clarity and brevity that philosophers everywhere can use to reach and reason with colleagues, students, and yes, even friends and family members. As a graduate student, I remember finding this dimension of Barry’s work striking, even if I lacked the language to articulate it. But looking back now, I see that Barry’s brevity reflected his prescient mastery of our new media environment. At a time when many philosophers approached email messages as if they were postal letters from the 19<sup>th</sup> century, Barry’s email read like a text message from the future. That he could do this without sacrificing the sound reasoning essential to our academic work makes his lessons about philosophizing in the digital media environment even more important; brevity *can* be compatible with logical argument.

## 5. CONCLUSION

I will close with one last anecdote here. After the whirlwind that was my dissertation defence, I sent Barry an anxious late-night email message asking for additional feedback. His response was characteristically brief, making it all the more memorable.

You did excellently.

I am duly proud.

Naturally, this stands as my favourite bit of feedback, and so it is a special pleasure to return the sentiment here: Barry, you have done excellently. We are duly proud of all that you have accomplished, and we are most grateful for all of your help and support, as a friend, colleague, mentor, and teacher. Cheers!

## NOTES

- 1 See, for example, “Social Orders: A Foreword from the Editors of this Volume,” “Biography of Barry Smith,” and the Appendix in this issue.
- 2 Even the terms that describe brevity’s opposite feel awkward and unwieldy: “verbosity,” “prolixity,” “wordiness,” “long-windedness,” etc.

## REFERENCES

- Kant, I. (1785/1993). *Grounding for the metaphysics of morals*. trans. J. W. Ellington. Indianapolis: Hackett Publishing.
- Postman, N. (1985). *Amusing Ourselves to Death: Public discourse in the age of show business*. New York: Viking.
- Smith, S. (2017). A biography of Barry Smith. *COSMOS + TAXIS*, 4: 4, 1–2.
- Wills, G. (1992). *Lincoln at Gettysburg: The words that remade America*. New York: Simon and Schuster.
- Zúñiga y Postigo, G. and Erion, G. J. (2017). *Social Orders: A Foreword from the Editors of this Volume*. *COSMOS + TAXIS*, 4: 4, 1–2.

# What Is It Like to Be Barry Smith?

WOLFGANG GRASSL

Professor Emeritus of Business Administration  
St. Norbert College  
100 Grant Street  
De Pere, WI 54115  
United States

Email: [wolfgang.grassl@snc.edu](mailto:wolfgang.grassl@snc.edu)

Web: [www.snc.edu/academics/faculty/wolfgang.grassl.html](http://www.snc.edu/academics/faculty/wolfgang.grassl.html)

Barry Smith is known for his work; very well known, in fact. But I would like to pay tribute to my friend Barry in this Festschrift with a few words that attempt to clarify that he is not reducible to his work, even if his life seems dedicated only to this work. Indeed, his successes are no doubt attributable in large part to his prodigious productivity. But none of us can really know what it's like to be Barry Smith in toto: as a son, brother, husband, friend, teacher, jazz aficionado, gastronomist, Aristotelian political animal, and all the other interesting dimensions of his consciousness. This is the subjective nature of experience, as Thomas Nagel so aptly pointed out in his famous article, "What Is It Like to Be a Bat?" We may infer from our own experience but cannot know the full extent of Barryhood. And I dare say that his experiences in our profession are perhaps much less like ours than we think.

Barry could have accepted offers for many faculty positions, research professorships, and distinguished university lectureships during his career. While any of us, his closest friends, would have been honored to be considered for such positions in the first place, Barry was in the happy position of being selective. In light of his enviable circumstances, it was all the more surprising when he revealed to us that the offer he received from the University at Buffalo was too seductive to let pass. He could have stayed in Liechtenstein, where in the 1990s he was made a Research Professor at the Internationale Akademie für Philosophie. But he took up the position of Julian Park Professor at the University at Buffalo. He did this because he felt that, there, he would be finally independent, no longer subject to anybody's whim or will, and in a collegial atmosphere of colleagues and friends. This decision involved not only a change in location yet again, as he had done so many times in his life before; this was a sig-

nificant relocation. Not being in his shoes, the change could have appeared to be a departure from a very comfortable position with papal privileges and ducal prerogatives. Yet only Barry knew what he was leaving behind, and fortunately, he was a very good fit for his new job.

Aside from the work for which Barry is known, colleagues, students, and collaborators of his also know him for his never-ending generosity. He is never too busy to write a letter of recommendation, read a paper and provide ample comments, or connect one person with another for their mutual benefit. Barry bestows random acts of kindness even upon those who have been unkind to him, as if he viewed them as having a right to ask him for favors, treating them in the same way as those one would think are truly deserving of his time and good will. It is always surprising to me how much he can do for others and still manage to maintain the high level of productivity that he has. I don't think that I know anyone busier than he, nor anyone who accomplishes as much as he does, yet he always has time to attend to others who seek his help. I cannot say how one becomes such an extraordinary person. I can only say that it makes me very happy and proud to call him my friend, and that my experience in this life has been the richer by knowing him.

## REFERENCE

Nagel, T. (1974). What is it like to be a bat? *The Philosophical Review*, 83 (4): 435–450

---

# BFO and DOLCE: So Far, So Close...

NICOLA GUARINO

ISTC-CNR Laboratory for Applied Ontology  
Via alla Cascata 56/C  
38123 Povo, Trento  
Italy

Email: nicola.guarino@cnr.it  
Web: [www.istc.cnr.it/people/nicola-guarino](http://www.istc.cnr.it/people/nicola-guarino)

**Keywords:** Barry Smith, ontology, mereology, DOLCE, BFO, tropes, universals, SNAP, SPAN

---

## 1. A BIT OF PERSONAL HISTORY

Let me start with a confession: I feel responsible for the fact that Barry Smith is not a philosopher anymore. “I used to be a philosopher,” he keeps saying, “now I am an ontologist.” On the other hand, somewhat paradoxically, Barry is definitely responsible for the fact that (as some people say) I am not an engineer anymore, being irreversibly contaminated by philosophy.<sup>1</sup>

Everything started almost 30 years ago, in the late 1980s, when I was struggling with the knowledge representation problems of medical expert systems, working in the domain of arrhythmia management. Obviously, one of the first problems I had to face was the proper representation of parthood relations. At that time, knowledge representation systems were already affected by the *belonging fallacy* (Wilensky 1987)—unfortunately still so frequent nowadays—which consists of aggregating together pieces of information (attributes) that may somehow belong to a particular object, without being explicit about the nature of the attribute relationship (Guarino 1992). Yet the importance of an explicit, proper modeling of the parthood relation seemed to me of utmost importance, especially for the medical domain. So, I started reading everything I was able to find on that topic. Fortunately, the lab where I was working at that time, despite being mainly devoted to systems dynamics and biomedical engineering, had a pretty good library covering also cognitive science and artificial intelligence, so I had the opportunity to discover the seminal paper on part-whole relations by Winston, Chaffin, and Herrmann (1987), which was really

illuminating to me. Among the references listed there, an obscure but intriguing title captured my attention:

*Parts and Moments: Studies in Logic and Formal Ontology*, edited by Barry Smith (1982)

The financial status of CNR at that time was much better than the present miserable situation, so I managed to order that expensive book. When I finally grabbed it, a whole new world opened up to me. The introduction “Pieces of a Theory” by Barry Smith and Kevin Mulligan (1982) was fascinating, although not an easy read for a person with an engineering background. In particular, what grabbed my attention was the passionate defense of

an ontological approach to the problem of the a priori, —an approach which stands in opposition to the logico-linguistic approach, inspired above all by Frege, which has come to be accepted as orthodoxy by Anglo-Saxon philosophers (Smith and Mulligan 1982).

While reading these words, I realized that the very same contrast between the logico-linguistic approach and the ontological approach was manifesting itself in the knowledge representation literature, which in that period was sacrificing expressivity in exchange of computational tractability. Stimulated by such discovery, I started a radical re-visitation of the literature, which ended up some years later in the proposal of a specific *ontological level* for knowledge representation primitives (1994; 2009), contrasted with the *epistemological level* proposed by Brachman (1979).<sup>2</sup>

At the same time, I went on reading “The Formalization of Husserl’s Theory of Wholes and Parts,” published by Peter Simons in the same collection (1982), and then Simons’ book on parts (1987), a milestone in my personal discovery of formal ontology. I guess it was through these readings that I became aware of the Center for the Study of Mitteleuropean Philosophy, led by Roberto Poli. I went to Trento to visit him in 1992, and in the following year we organized together the first International Workshop on Formal Ontology in Conceptual Analysis and Knowledge Representation, held in Padova in March 1993. This was the first interdisciplinary conference on what is now called *applied ontology*. Barry Smith was an invited speaker, and we started cooperating. The following year, Barry invited me to the 1994 Wittgenstein symposium, organized by him (with Roberto Casati and Graham White) on the theme ‘Philosophy and the Cognitive Sciences.’ I presented there my first ideas on the ontological level, based on an ongoing work with Pierdaniele Giaretta and Massimiliano Carrara (1994). Then I relied a lot on his comments while writing my first journal paper defending “the systematic introduction of formal ontological principles in the current practice of knowledge engineering” (1995). In a few years, by the time of the Buffalo conference on *Applied Ontology* organized by Barry (1998), and the first conference on *Formal Ontology in Information Systems* held in Trento in June of the same year (Guarino 1998), the mutual contamination was consummated.

## 2. BFO AND DOLCE

After this personal historical note, I would like to comment on some work Barry and I started several years after our mutual contamination, namely around 2001, when each of us was involved in a funded project concerning the development of an upper level ontology: BFO and DOLCE were born more or less at the same time.<sup>3</sup> Since the beginning, we had several occasions to interact and compare our approaches, but the two projects took different directions. After the two ontologies started being adopted worldwide, on several occasions<sup>4</sup> we agreed in principle on the utility and importance of attempting some kind of alignment, but for various reasons the real work never started. Now, as a gift to Barry for this special occasion, I would like to briefly comment in this paper on the main differences and similarities between the two ontologies, suggesting some possible strategies for isolating a common core. At the same time, I will take this opportunity to comment on possible DOLCE extensions, adjustments or revisions whose need emerged in the past, at

least in my view. Indeed, differently from BFO, which underwent two main releases and was maintained more or less as a product, the original DOLCE axiomatization (unfortunately never published in an official academic venue) remained very stable over the years, except for a systematization of its core assumptions done by Borgo and Masolo (2009). Yet, I believe that a comparison with BFO may motivate a re-visitation of some DOLCE choices.

While doing this comparison between the two ontologies, let me clarify immediately that I will not attempt here to enter into the realist/antirealist debate, which in the last years has been at the core of almost all discussions on BFO (Merrill 2010; Smith and Ceusters 2010). I must say that, although contaminated with philosophy, I still have the soul of a pragmatic engineer, so I evaluate ontological choices on the basis of their actual utility, independently of any deep metaphysical doctrine. To me, ontologies are useful not only for the integration of scientific data, but more in general for the integration of software systems and databases. To this purpose, the specific role of ontologies is to make explicit people’s assumptions about the domain of interest of software applications, independently of the metaphysical nature of such assumptions, and even independently of their scientific accuracy. In this perspective, the main utility criterion I adopt is based on language, namely on the degree an ontological distinction reflects a distinction in the way people talk of a particular domain. That’s why DOLCE takes a descriptive approach towards language, avoiding any deep metaphysical commitment. That said, I am convinced that many of the choices made by BFO may be useful under the DOLCE perspective, and vice versa.

### 2.1 Objects

While analyzing the basic notion of object, BFO and DOLCE took different directions from the beginning. Although both ontologies agree that objects are “endurants with unity,” DOLCE puts a lot of attention in characterizing the differences and the relationships between physical objects and amounts of matter, without investigating the notion of unity in detail, mainly because different subtypes of objects may have different unity criteria. BFO, on the contrary, adopts a common notion of causal unification and maximal self-connection for all objects, and develops on this basis a sophisticated theory of fiat parts, outer boundaries and sites. Letting aside a radical difference concerning DOLCE’s multiplicative approach to deal with the relationship between objects and amounts of matter,<sup>5</sup> this is certainly an area where some integration may be achieved, in the sense that some BFO

axioms and definitions may be somehow incorporated in DOLCE, and efforts may be joined to further develop some useful notions which are still weakly characterized, such as the notion of a site.<sup>6</sup> A lot of literature exists already on places, boundaries and topological unity, while in my opinion further unity criteria concerning morphological, functional, and social wholes might be considered. Also, a further analysis of the notion of causal unification defined in terms of relative movement might be particularly useful for the ontology of mechanical assemblies, possibly in connection with the notion of degrees of freedom.<sup>7</sup>

## 2.2 Qualities, roles, and dispositions

The treatment of individual qualities is probably one of DOLCE's most original contributions. The idea of distinguishing the intension of a term like *the color of this rose* from its actual extension, which may change at different times, was firm in my mind from my early work on knowledge representation (Guarino 1991). The problem we faced with DOLCE was to reconcile this intuition with the notion of trope, which is similar but not identical: a standard example of a trope is *the particular color of this rose*, or, in Barry Smith's words, "the particular case of redness of a particular fly eye." This means that tropes are classically understood as *super-determinate* particularized properties. Under this view, if *the color of this rose* denotes a trope, then the only way to account for a change in color is to admit a mechanism of trope replacement. But if a particular color is replaced by another particular color, then sure, we can say that the rose has genuinely changed, but we cannot say that its *color* has genuinely changed! So, we decided to deal with this problem by postulating the existence of *individual qualities* as dependent particulars that abstract away from classic tropes, being able to genuinely change while "moving" within a quality space. Several years later, I discovered that Friederike Moltmann (2007; 2013) made a very similar choice while challenging the standard trope theory by taking inspiration from Fine's powerful idea of *variable embodiment*, and treating trope-referring terms like the color of this rose or the temperature of this room as variable tropes, i.e., variable embodiments of standard tropes. In a recent paper with Giancarlo Guizzardi (2016), I revisited the DOLCE approach to qualities in the light of these ideas, proposing a general approach to reification and truthmaking according to which qualities are *weak truth-makers* (Parsons 1999) of descriptive properties: it is the color of the rose, because of the way it contingently is, that makes it true that the rose has a certain color.

In the recent years, BFO has adopted a position<sup>7</sup> concerning qualities which is very similar to DOLCE's: in BFO, the color of a rose is a dependent continuant that uniquely inheres in the rose, and remains identical to itself throughout the rose's life, while possibly instantiating different *determinate universals* (like being a red color or a brown color) at different times. On the other hand, DOLCE *reifies* such determinate universals, associating each of them to a region, which belongs to a *quality space* that is characteristic of each quality kind. In this way we have two advantages: we are able to talk of quality "values" (what we called *qualia*) since they are in the domain of discourse, and we can describe the structure of quality spaces. For instance, we can say that the red region, in the space of colors, is opposite to the green region and close to the brown region. Stefano Borgo and Claudio Masolo (2009) have described this approach in detail. In conclusion, the ontology of qualities is another interesting area where efforts might be joined. I mention here some open problems, which in my opinion may be addressed independently of the philosophical positions of the two groups, whose solution may contribute to strengthen the applied ontology field.

**Local qualities.** When we describe extended entities, like a vase or a river, we refer to their qualities in different ways. A river has (more or less) a definite length, but its width varies with the distance from the source, typically getting higher towards the end. Similarly, a vase has a definite height, but its width may vary. So, at least for certain entities, quality kinds such as length, height and width don't behave in the same way: length or height just inhere to these objects with no need of further qualification, while width requires a spatial localization in order to be determined. In my view, length and height, in these examples, behave as *global qualities*, while width behaves as a *local quality*. A local quality of a certain object is a quality which actually inheres to a *part* of that object, but, despite this fact, is somehow considered (I would say, from the cognitive point of view) as a quality of the whole object: so, we rarely say "the width of this river stretch is 100 meters," but we prefer to say "the river's width is 100 meters *here*." Analogously, we say "the depth of the Adriatic Sea is much higher along the Croatian coast than along the Italian coast," referring to "the sea's depth" as one single entity, although, so to speak, spread out in space. Indeed, in many simple cases, we describe the *qualitative shape* of a certain object in terms of the behavior of a local spatial quality along a certain dimension.

Of course, the distinction between global and local qualities is very general, and goes much beyond purely spatial qualities. Consider for instance the mass or volume of a physical object vs. its density or its temperature, or the duration of a rain vs. its intensity. In all these cases, we observe different ways qualities of things behave with respect to the parts of such things. The problem at hand, therefore, is the *mereological behavior of qualities*. Looking at the philosophical literature, the phenomenon we have described appears to be connected to a more general one, concerning the mereological behavior of properties. A classic distinction in this respect is that between homoeomerous and anomoeomerous properties, based on whether or not a property holding for a whole also holds for all its parts, and discussed in particular by Armstrong (1978). Ingvar Johansson (1989) built on this work in the light of the distinction between determinates and determinables, focusing his attention to the case of determinate properties belonging to the same determinable, and to the ontological nature of patterns like a distribution of colored areas on a surface (Johansson 1998). This was, at least in my knowledge, one of the few works addressing in some detail the mereological behavior of qualities, and not just that of generic properties. I have elaborated on these ideas in a workshop paper (2013b), but much more should be done in this area, which looks very relevant for many practical applications.

**Relational and quasi-relational qualities.** In BFO, relational qualities are qualities that have a plurality of independent continuants as their bearers. A classic example is a marriage bond. In the BFO 2.0 specification, a relational quality is defined as a quality that inheres in two different individuals. This violates a very plausible and important principle concerning inherence, present in DOLCE, which says that if  $x$  inheres in  $y$  and  $x$  inheres in  $z$ , then  $y=z$ . This is the so-called *non migration principle*, which says that inherence is functional: a quality only inheres in a single thing. A possibility to avoid this problem is to assume that a relational quality inheres in a mereological sum of continuants, instead of inhering separately in both of them. However, I believe that we can get rid of relational qualities so defined, and rather adopt a general ontological theory of relationships based on ordinary qualities and what I will call—following Moltmann—*quasi-relational qualities*.<sup>8</sup> A quasi-relational quality is a quality that, besides inhering in a single individual, is also specifically dependent on a different individual. For example, the commitment towards a partner, in a marriage bond,

can be seen as a quasi-relational quality that inheres in a partner and depends on the other one.

To accommodate this view, we need to give up an axiom—built into DOLCE—saying that a quality inheres in an individual throughout its life. Clearly this doesn't hold for quasi-relational qualities, since a commitment towards a person comes into being only after somebody becomes at least acquainted with that person, and may last only for a short time. Once we add quasi-relational qualities to ordinary (non-relational) qualities, we have in our hands a powerful tool to account for the nature of (some) relationships, which may be seen just as mereological sums of qualities. This is the view developed in my recent work with Giancarlo Guizzardi (2015; 2016). In this view, a marriage relationship is seen as a mereological sum of quasi-relational qualities (the mutual commitments), while a comparative relationship, such as the height relationship between a father and his son, is just a sum of ordinary qualities: the two heights. Note that, despite the fact that the two *relations* involved in these examples (say, *married-with* and *taller-than*) have a different nature, still it is important for both of them to have a clear ontological account for their instances, namely the corresponding *relationships*.<sup>9</sup> A practical advantage of seeing relationships as sums of qualities is that we can talk of them, describing for instance their behavior in time or their causal interactions with the world. Note that this picture only works for certain kinds of relations, namely those that Guizzardi and I called *descriptive relations*, which hold in virtue of some qualities of their relata. Non-descriptive relations, such as the *formal relations* of inherence, dependence or parthood, just hold between their relata as such, without the need for qualities.

In conclusion, coming back to BFO, I don't think there is a need to introduce relational qualities inhering in a plurality of bearers: their respective (ordinary or quasi-relational) qualities will do.

**Qualities and dispositions.** Within specifically dependent continuants, BFO makes a sharp distinction between qualities and realizable entities. The former “are fully exhibited or manifested or realized” within the entity they inhere in. The latter, in contrast, “can inhere without being realized,” and “are exhibited only through certain characteristic processes of realization.” In turn, a process of realization is defined in the present BFO 2.0 specification (Smith 2016) as a process which has as participant the bearer of a realizable entity, so that it seems to me there is a circularity which should somehow be fixed.

Anyway, within realizable entities, BFO distinguishes between roles and dispositions. I will postpone the discussion on roles, focusing here on the distinction between qualities and dispositions, which I must say I find very confusing. My point is that there is a reasonably clear difference between dispositional and non-dispositional (so-called categorical) *properties*, but this difference is not reflected, at the ontological level, in a distinction among specifically dependent continuants of different kinds.<sup>10</sup> In other words, the truth-maker of the property *being fragile* seems to be the same as the truth-maker of the property *having a certain crystalline structure*. This means that there is a certain quality inhering in an object—its crystalline structure—that is responsible for a certain conditional behavior. The connection between a particular kind of crystalline structure and the corresponding conditional behavior is given by a law of nature, whose ontological presuppositions do not require the existence of other specifically dependent continuants besides the crystalline structure itself. Of course, it may be important, for scientific reasons, to be able to *represent* such laws of nature, but this is not a good reason to introduce an ad hoc ontological category. After all, the very fact that the same material basis may be responsible of many different dispositions, and the difficulty of distinguishing one disposition from another (Arp et al. 2016) is a good evidence of their problematic ontological status.

Another reason for not postulating a further kind of specifically dependent continuants besides qualities is that many—if not all—ordinary qualities may be described as dispositions: *colors* are an obvious case, but also an individual *mass* can be understood as a disposition to maintain a body's velocity, a *size* as a disposition to pass through holes, a *happiness* as a disposition to interact with people in a certain way, and so on. Finally, a further reason for being suspicious about dispositions conceived as a genuine ontological category is bound to the notion of realization. The possibility to participate to certain “characteristic processes” is allegedly reserved only to dispositions, but I would say that all ordinary qualities do participate to characteristic processes, where they manifest themselves in various ways. For example, a body's temperature may manifest itself in a heating process, and a body's shape may manifest itself in a deformation process.

In conclusion, I believe that it is enough, for our purposes, to admit qualities of different degrees of complexity: there are simple qualities like mass or length, more complex qualities like color or taste, and very complex qualities like fragility. Complex qualities are specifically dependent on simpler

qualities. Each of these qualities can be described in a dispositional or non-dispositional way.

**Roles.** Given the semi-personal nature of this essay, let me say that I have been always obsessed by roles. One of my earliest papers in knowledge representation is entitled “What's in a role?” (1990), and yet I confess that I don't have a fully satisfactory answer to this question, although I have certainly learned a lot since then. I have been always fascinated by the subtle aspects of this notion, and by its ubiquitous relevance for practical applications. Yet, differently from dispositions, roles haven't been much considered in the analytic ontology literature, while of course they have been studied by linguistics and sociology, and play a prominent role (allow me the pun) in applied ontology.

It is not a surprise therefore to see roles appearing in BFO, but their characterization as realizable specifically-dependent continuants reflects a very peculiar understanding of the role notion which, although useful, would require a broader framework. Let me first clarify some terminological issues. In the past (2009; 2000), I have always used the term ‘role’ to refer to anti-rigid externally-dependent properties. However, I acknowledge it makes sense to reserve this term to particulars, so I agree with the distinction between roles and role-related defined classes (*role properties*) adopted in BFO (Arp et al. 2016). Of course, we have to clarify what kind of particulars we are talking of. In this respect, a useful analysis of different kinds of roles has been proposed by Frank Loebe (2007), who distinguishes among three role types: *relational roles*, *processual roles*, and *social roles*. Now, I think that BFO roles may be adequate to represent relational roles, but fall short of accounting for processual roles and social roles. Let me informally discuss the three cases, presenting a view which is slightly different from that discussed by Loebe, and is still largely work in progress.

*Relational roles* are those aspects of an entity that are *actually involved* in a relationship. In a love relationship between John and Mary, John's love towards Mary is the role he *has*. Describing his role in the relationship means describing his love (which may change in time). Such love inheres in John and is externally dependent on Mary, so it is an externally dependent continuant, that is, a BFO role. The *actual* role of a doctor in a treatment relationship with a patient is again a (complex) externally dependent continuant, including his *actual* competencies, commitment, and so on. According to the discussion above, the treatment relationship itself is the mereological sum of the doctor's (relational) role and the patient's (relational) role. Note that ‘externally dependent



continuant' is just a synonym of what I have called 'quasi-relational quality' in the above discussion on relationships.

*Processual roles* are defined by Loebe as 'slices' of processes with respect to the dimension of participants. Using his example, when John moves his pen, he and the pen are the participants to that process, and the processual role John *has* in the process captures what John does in that participation ("Thinking of a mime who moves an imaginary pen should be a good illustration of the notion of a processual role.") Clearly, processual roles are not externally dependent continuants, so they do not fall under the category of BFO roles. Yet, a great practical relevance have the various *kinds* of processual roles (not mentioned by Loebe), which in my opinion correspond exactly to what in linguistics are called *thematic roles*: ways of participation in a process (or an event). Classic examples are *agent*, *patient*, *instrument*, and so on. A continuant is the agent of a process (that is, it has the *agent* role-property) if and only if its participation in that process (i.e., its processual role) is of the kind *agent*.

Finally, *social roles*<sup>11</sup> differ in my opinion from the previous cases since they are conventional behaviors (so, behavior *kinds*) reflecting social expectations or intentional goals. The etymology of 'role' is illuminating in this respect: the term comes from the French *rôle*, which in turn comes from the old French *rolle*, used to denote the roll (of paper) on which an actor's part was written. So, we can assume that behind each social role there is an (implicit or explicit) *role description* stating certain behavioral rules. Having a social role means being *expected* or being *wanted* to comply to such rules. The distinction between wanted and expected behaviors marks a radical difference between social roles, which I have discussed in some detail in a paper (2013a) on functional roles and replaceability in the light of Anscombe's (and Searle's) notion of *direction of fit* (Anscombe 1957). To put it shortly, there is a difference between the *customer* role and the *employee* role: the former's behavior is expected, while the latter's is wanted. A striking consequence of this difference is that you can replace an employee, but you can't replace a customer (you can get another customer, or change your customer, but—at least in the ordinary way of speaking—you don't replace customers). A further linguistic evidence is that only for *wanted* roles<sup>12</sup> we can properly say that they are *played*: it makes perfect sense to play the employee role, but it is a bit strange to play the customer role or the friend role. This is the reason why previously I emphasized the fact that things do not *play* relational or processual roles, but they just *have* those roles.

Going back to BFO roles, it is clear that, being specifically-dependent externally-grounded continuants (that is, quasi-relational qualities), they are very similar to the relational roles I have discussed above. The difference is that they are assumed as being realizable entities, while this notion of realizability is not present (or at least not necessary) for relational roles, and seems to be somehow related to social roles, which presuppose the realization of an expected or wanted behavior. However, social roles, in the way I defined them, cannot *inhere* in continuants, simply because they are not particulars, but universals (behavior kinds). Of course, having a social role implies having a number of quasi-relational qualities (such as commitments, claims, duties, and expectations) but these are not social roles in the ordinary sense: they are rather relational roles, whose manifestations (the *actual* behavior) may or not be in agreement with the *expected* or *wanted* behavior. In conclusion, it seems that BFO can only account for a notion that is *related* to the ordinary notion of social role, namely the *actual* attitude/commitment/disposition to exhibit a social behavior, but is not a social role in the ordinary sense.<sup>13</sup> Indeed, only for social roles, but not for the other roles, it makes sense (and is relevant) to express the distance between an *actual* relational behaviour and the expected or wanted behavior characteristic of a given social role. This distance is usually expressed by a *compliance* relationship.

### 2.3 SNAP and SPAN

While concluding this essay,<sup>14</sup> which has given me a nice opportunity to better understand Barry's philosophical positions and practical motivations, I cannot avoid mentioning one of the aspects of BFO that mostly puzzles me: the choice to consider objects and processes as alternative ways of describing reality, and not as complementary aspects of the same reality. Fortunately, it seems to me that this choice is more a concern of the old philosopher than a preoccupation of the present applied ontologist, and has almost disappeared now: while participation was presented as a "trans-ontological relation" by Grenon and Smith (2004), in the present BFO 2.0 specification it appears as an ordinary relation. Indeed, without seeing objects and processes as parts of the same ontology, it would have been difficult to define realizable entities in terms of realized processes of certain kind.

A further, subtler evidence of the unavoidable entanglement of objects and processes lies in the choice (in practice, the need) to distinguish among multiple processes occurring in the same space-time. In deciding about SNAP and SPAN,

Barry Smith drew on an intuition of Zemach that “a spatiotemporal world can be cut in several *radically* different ways” (Zemach 1970). However, as clarified in the BFO 2.0 specification, “where events, for Zemach, are identified with the entire contents of some given spatiotemporal region, BFO allows that the same spatiotemporal region may be occupied by multiple different processes (as for example your *running* process and your simultaneous process of *getting warmer*)” (Smith 2016, p. 16). But how would these different processes be isolated from the global process occurring in that spatiotemporal region? The boundaries of a spatiotemporal region are very reasonable individuation criteria for ‘global’ processes, but if we want a more fine-grained granularity we need to adopt suitable criteria to distinguish a running process from a warming process. A natural way to do this is to consider processes as *manifestations of qualities* inhering in continuants: for example, a warming process is a manifestation of a temperature quality inhering in a particular continuant. So, being able to isolate a warming process from a global process occurring in a spatiotemporal region requires being able to *focus* (Guarino and Guizzardi 2016) on such specific quality and continuant. But this requires an ontology that admits continuants and occurrents as parts of the same reality.

I think that this idea of processes as manifestation of qualities (or, vice-versa, as qualities as the focus of processes) is something that can hopefully inspire, together with the other suggestions I made in this paper, for the various foundational ontologies (such as DOLCE, BFO, GFO, and UFO) that are more or less based on the Aristotelian square and on Lowe’s four-category ontology. I am convinced that Barry and I can agree on a common core, and I really hope we can mutually understand the different reasons for extending such core in different directions.

## NOTES

- 1 Despite this, I am still a proud engineer, especially since I am more interested in finding solutions than finding problems (supposedly the key difference between philosophers and engineers). That’s why, while being enormously grateful to philosophy for helping me to understand problems, I tend to be very agnostic towards deep metaphysical positions, picking up in a very eclectic way just what I need to find solutions that work enough.
- 2 In retrospect, the position I defended then was very much similar to the one advocated by Barry with his criticism of “fantology” (Smith 2005).
- 3 The first version of BFO was published in the DOLCE deliverable (Masolo, Borgo, Gangemi, Guarino, and Oltramari 2003).
- 4 Most notably, in a workshop on applied ontology organized by Jonathan Lowe in May 2013, shortly before his early departure.
- 5 Amounts of matter seem to be absent in BFO. There is a notion of ‘object aggregate’ (say, a collection of bricks), but—as far as I understand—if this collection of bricks forms a house, the relationship between the house and the collection of bricks (which would be a constitution relation in DOLCE), is not analysed in BFO.
- 6 The BFO 2.0 specification (Smith 2016) defines a site as “a three-dimensional immaterial entity that is (partially or wholly) bounded by a material entity or it is a three-dimensional immaterial part thereof.” I wonder whether all immaterial entities included within the convex hull of a material object but not being part of it would count as sites. For instance, is the space between your neck and your shoulder a site?
- 7 This position is clearly documented in the BFO V2.0 specification. Previously it was less clear, and on several occasions I had the feeling that BFO qualities were super-determinate tropes. For instance, “the particular case of redness of a particular fly eye” example is taken from a lecture on “Towards a Standard Upper Level Ontology” given by Barry Smith in September 2011. In any case, I am glad for the convergence now.
- 8 In the past, I have often used the term *relational qualities* to denote what I now call *quasi-relational qualities*.

- 9 So I disagree with the view adopted by BFO that comparative relationships are not entities in their own right (Arp, Smith, and Spear 2016).
- 10 As far as I understand, this is the position held by Mumford in his book on dispositions (1998).
- 11 I refer here to social roles in the strict sense, not in the very general sense discussed in (Masolo et al. 2004).
- 12 It seems to me that all *wanted* roles are *functional* roles, but I will not touch this aspect here.
- 13 I must add however that even this interpretation of BFO roles is problematic, since their definition prescribes that a role “is not such that, if it ceases to exist, then the physical make-up of the bearer is thereby changed” (Smith 2016, p. 57). I think that, especially for social roles, the corresponding attitudes/commitments/dispositions are not independent from the physical make-up of their bearer. For instance, the commitment to realize a student role of course requires some changes in the brain’s “make-up” of its bearer. I would say that, in general, *active* role-properties (*being the lover of Mary*) presuppose some (non-essential) change in the physical make-up of their role bearers, while this is not required for passive roles (*being loved by John*).
- 14 I am thankful to Giancarlo Guizzardi for his useful comments on a previous draft of this paper.

## REFERENCES

- Anscombe, G. E. M. (1957). *Intention*. Cambridge: Harvard University Press.
- Armstrong, D. M. (1978). *Universals and scientific realism, volume 2: A theory of universals*. Cambridge University Press.
- Arp, R., Smith, B., and Spear, A. (2016). *Building ontologies with basic formal ontology*. Cambridge, MA: MIT Press.
- Borgo, S., and Masolo, C. (2009). *Foundational choices in DOLCE*. In: S. Staab, S. Staab, and R. Studer (Eds.) *Handbook on ontologies*. Berlin: Springer Verlag, pp. 361–381.
- Brachman, R. J. (1979). On the epistemological status of semantic networks. In: N. V. Findler (Ed.), *Associative networks: Representation and use of knowledge by computers*. New York: Academic Press, pp. 1–48.
- Grenon, P. and Smith, B. (2004). SNAP and SPAN: Towards dynamic spatial ontology. *Spatial Cognition and Computation*, 4(1): 69–103.
- Guarino, N. (1990). *What’s in a role: Towards an ontological foundation for terminological logics*. Padova: LADSEB-CNR Int. Rep. 06/90
- Guarino, N. (1991). A concise presentation of ITL. *Lecture Notes in Computer Science* Vol. 567. Berlin/Heidelberg: Springer-Verlag, pp. 141–160. <http://doi.org/10.1007/bfb0013526>
- Guarino, N. (1992). Concepts, attributes and arbitrary relations. *Data & Knowledge Engineering*, 8(3): 249–261. [http://doi.org/10.1016/0169-023X\(92\)90025-7](http://doi.org/10.1016/0169-023X(92)90025-7)
- Guarino, N. (1994). The ontological level. In: R. Casati, B. Smith, and G. White (Eds.), *Philosophy and the cognitive sciences*. Vienna: Hölder-Pichler-Tempsky, pp. 443–456.
- Guarino, N. (1995). Formal ontology, conceptual analysis and knowledge representation. *International Journal of Human and Computer Studies*, 43(5/6): 625–640.
- Guarino, N. (1998). Formal ontology in information systems. In: N. Guarino (Ed.) *Formal ontology in information systems*. Amsterdam/Washington DC: IOS Press, pp. 3–15.
- Guarino, N. (2009). The Ontological level: Revisiting 30 years of knowledge representation. In: A. T. Borgida, V. K. Chaudhuri, P. Giorgini, and E. S. Yu (Eds.) *Conceptual modeling: Foundations and applications: Essays in honor of John Mylopoulos*. Berlin: Springer Verlag, pp. 52–67.
- Guarino, N. (2013a). Artefactual systems, missing components and replaceability. In: M. Franssen, P. Kroes, T. Reydon, and P. E. Vermaas (Eds.) *Artefact kinds: Ontology and the human-made world*. Heidelberg: Springer, pp. 191–206. [http://doi.org/10.1007/978-3-319-00801-1\\_11](http://doi.org/10.1007/978-3-319-00801-1_11)
- Guarino, N. (2013b). Local qualities, quality fields, and quality patterns: A preliminary investigation. In: O. Kutz, M. Bhatt, S. Borgo, and P. Santos (Eds.) *The shape of things: Proceedings of the second interdisciplinary workshop on the shape of things*. CEUR Workshop Proceedings, pp. 75–81. ISSN 1613-0073.
- Guarino, N., and Guizzardi, G. (2015). We need to discuss the relationship: Revisiting relationships as modeling constructs. In: J. Zdravkovic, M. Kirikova, and P. Johannesson (Eds.) *Proceedings of the Advanced Information Systems Engineering 27th International Conference, CAiSE 2015: Lecture Notes in Computer Science* Vol. 9097. Heidelberg: Springer, pp. 279–294. [http://doi.org/10.1007/978-3-319-19069-3\\_18](http://doi.org/10.1007/978-3-319-19069-3_18)
- Guarino, N., and Guizzardi, G. (2016). Relationships and events: towards a general theory of reification and truthmaking. In: G. Adorni, S. Cagnoni, S. Gori, and M. Maratea (Eds.) *Proceedings of the AI\*IA 2016 Advances in Artificial Intelligence XVth International Conference of the Italian Association for Artificial Intelligence: Lecture Notes in Computer Science* Vol. 10037. Heidelberg: Springer, pp. 237–249. [http://doi.org/10.1007/978-3-319-49130-1\\_18](http://doi.org/10.1007/978-3-319-49130-1_18)
- Guarino, N., Oberle, D., and Staab, S. (2009). What is an ontology? In: S. Staab and R. Studer (Eds.), *Handbook of ontologies*. Berlin/Heidelberg: Springer, pp. 1–17. <http://doi.org/10.1007/978-3-540-92673-3>
- Guarino, N., and Welty, C. (2000). A formal ontology of properties. In: R. Dieng and O. Corby (Eds.) *Knowledge engineering and knowledge management: Methods, models and tools. 12th International Conference, EKAW 2000*. Berlin: Springer Verlag, pp. 897–112.
- Johansson, I. (1989). *Ontological investigations: An inquiry into the categories of nature, man and society*. London: Routledge.
- Johansson, I. (1998). Pattern as an ontological category. In: N. Guarino (Ed.) *Formal ontology in information systems*. Amsterdam: IOS Press, pp. 86–94.
- Loebe, F. (2007). Abstract vs. social roles: Towards a general theoretical account of roles. *Applied Ontology* 2(2): 127–158.

- Masolo, C., Borgo, S., Gangemi, A., Guarino, N., and Oltramari, A. (2003). *WonderWeb: Ontology infrastructure for the semantic web*, European Community IST Project 2001-33052 (The DOLCE Ontology). Deliverable D18.
- Masolo, C., Vieu, L., Bottazzi, E., Catenacci, C., and Ferrario, R. (2004). In: D. Dubois, C. Welty, and M. Williams (Eds.) *Principles of knowledge representation and reasoning: Proceedings of the 9th international conference KR 2004*. Menlo Park: AAAI Press, pp. 267–277.
- Merrill, G. H. (2010). Ontological realism: Methodology or misdirection? *Applied Ontology* 5(2): 79–108. <http://doi.org/10.3233/AO-2010-0076>
- Moltmann, F. (2007). Events, tropes, and truthmaking. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 134(3): 363–403. <http://doi.org/10.2307/40208723?ref=no-x-route:697f249ae0122ba49bb626df847ad10c>
- Moltmann, F. (2013). *Abstract objects and the semantics of natural language*. Oxford: Oxford University Press. <http://doi.org/10.1093/acprof:oso/9780199608744.001.0001>
- Mumford, S. (1998). *Dispositions*. Oxford: Oxford University Press.
- Parsons, J. (1999). There is no “truthmaker” argument against nominalism. *Australasian Journal of Philosophy* 77(3): 325–334. <http://doi.org/10.1080/00048409912349081>
- Simons, P. M. (1982). The formalization of Husserl’s theory of wholes and parts. In: B. Smith (Ed.) *Parts and moments: Studies in logic and formal ontology*. München: Philosophia Verlag, pp. 113–159.
- Simons, P. M. (1987). *Parts: A study in ontology*. Oxford: Clarendon Press.
- Smith, B. (1998). Applied ontology: a new discipline is born. *Philosophy Today*, 12(29): 5–6.
- Smith, B. (2005). Against fantology. In: M. E. Reicher and J. C. Marek (Eds.) *Experience and analysis: Proceedings of the 27th Wittgenstein symposium*. Vienna: ÖBV and HPT, pp. 153–170.
- Smith, B. (2016). *Basic formal ontology 2.0: Specification and user’s guide*. <https://github.com/BFO-ontology/BFO/raw/master/docs/bfo2-reference/BFO2-Reference.pdf>
- Smith, B. (Ed.). (1982). *Parts and moments: Studies in logic and formal ontology*. München: Philosophia Verlag.
- Smith, B. and Ceusters, W. (2010). Ontological realism: A methodology for coordinated evolution of scientific ontologies. *Applied Ontology*, 5(3-4): 139–188. <http://doi.org/10.3233/AO-2010-0079>
- Smith, B., and Mulligan, K. (1982). Pieces of a theory. In: B. Smith (Ed.), *Parts and moments: Studies in logic and formal ontology*. München: Philosophia Verlag, pp. 15–109.
- Wilensky, R. (1987). *Some problems and proposals for knowledge representation, Technical report No. AD-A172 989*. Berkeley: University of California, Berkeley.
- Winston, M. E., Chaffin, R., and Herrmann, D. (1987). A taxonomy of part-whole relations. *Cognitive Science* 11(4): 417–444. [http://doi.org/10.1207/s15516709cog1104\\_2](http://doi.org/10.1207/s15516709cog1104_2)
- Zemach, E. M. (1970). Four ontologies. In: *Mass terms: Some philosophical problems*. Dordrecht: Springer Netherlands, pp. 63–80. [http://doi.org/10.1007/978-1-4020-4110-5\\_6](http://doi.org/10.1007/978-1-4020-4110-5_6)

# Logic and Ontology

JOHN T. KEARNS

Department of Philosophy  
University at Buffalo  
119 Park Hall  
Buffalo, NY 14260  
United States

Email: kearns@buffalo.edu

Web: [https://www.buffalo.edu/cas/philosophy/faculty/faculty\\_directory/kearns.html](https://www.buffalo.edu/cas/philosophy/faculty/faculty_directory/kearns.html)

**Keywords:** Barry Smith, logic, ontology, Frege, Leśniewski, speech acts, language acts, document acts

## 1. BARRY COMES TO UB

Barry Smith joined the philosophy department about the time I began my first term as chair. His coming to UB had already been arranged, for I wasn't involved in recruiting him and I didn't know him. But he soon made everyone's acquaintance. Peter Hare and Jorge Gracia each considered himself responsible for bringing Barry to the department, and I have no knowledge of which of them was right.

Anyway, Barry's joining us changed the character of the department, and he made the department a more intellectually lively place. He brought the editorship of the *Monist* with him, although that didn't impact the department so much, and he got involved with people and programs around the campus. At talks, he characteristically took it upon himself to show speakers what was wrong with whatever view they had presented, and his criticisms were frequently deserved. Barry also had philosophers whom he favored, and championed, especially David Armstrong and John Searle, even if they did occasionally get things wrong.

Barry became a member of the Center for Cognitive Science and, together with Len Talmy and Robert Van Valin, organized the First International Summer Institute in Cognitive Science. That was an intellectual success, but, as the dean regretted, not a financial one. Over the years Barry has organized many conferences, and brought many interesting faculty and students to campus from this country and abroad—sometimes to pursue degrees here, sometimes to work here as faculty, and sometimes to do research and to interact with us for shorter periods. He also organized one of the annual Wittgenstein conferences in Kirchberg, Austria.

Besides making the department more interesting and more fun, Barry's interests and activities, including his own work, have been quite helpful to me in my own philosophical projects. Barry is a "quick study;" he can take in a position or an argument quite quickly, and provide useful comments and criticisms. He is also good at seeing problems that need to be addressed, often addressing these himself, or trying to. His enthusiasm for philosophy and for doing philosophy is infectious. Philosophy probably is worthwhile!

At some point, Barry's interest in ontology became a passion for ontology, and he has since become something like the world's Chief Executive Ontologist (the world's CEO). In the past I have attended talks in which Barry claimed that ontology is the successor discipline to philosophy, and that he is an ontologist but no longer a philosopher. I think those claims were excessive, and that even Barry must realize this by now. For Barry is certainly still a philosopher, an insightful and successful philosopher, and it is also certainly ok to be a philosopher without being an ontologist or ontologer.

In connection with his ontological studies, Barry has had amazing success in obtaining grants to support research in ontology, including applied ontology, and in organizing and guiding the research of large numbers of people. He is the manager of a large and thriving ontological enterprise. Once, the dean of our faculty (who is now a former dean) remarked to me that Barry's research profile, in terms of publications and grants, was entirely comparable to those of leading faculty in natural science departments. Who would have thought that a philosopher could accomplish so much?

## 2. LOGICAL BEGINNINGS FOR ONTOLOGY

When Aristotle invented logic as a field of study, he seems to have been primarily concerned with proof or demonstration. He didn't design, or have any idea of, an artificial logical language, but instead made do with ordinary Greek expressions, which he both studied and employed. Aristotle wanted to understand how it is that simply by reasoning, often from what we know already, and sometimes from "scratch," we can obtain new knowledge. Although Aristotle was interested in determining (finding out) what things and kinds of things the world contains, that wasn't the focus of his logic.

Aristotle found, and focused on, sentences or statements such that if we use some of them to express what we know, this commits us to admit or grant or concede others of them to also be correct. From what we know, by reflecting on how the premiss statements are related to the others, we recognize that we can use the others to say what we then come to know. As it happened, Aristotle began by noticing the statements and the relations that are characteristic of what we now call syllogistic logic. And he seems to have thought that the middle term that occurs in the premisses but not the conclusion of a deductively correct syllogism plays an important role in extending a person's knowledge from the premisses to the conclusions of these arguments.

When Frege invented modern logic, he designed a perspicuous language for making factual statements which represent things as being this way or that, and formulated a deductive system for establishing that some sentences or schemas of this language are used to state logical laws (logical truths). Frege doesn't seem to have thought that his language reveals hidden features of ordinary language, for his logical language is based on his analyses of and reflections on ordinary language. But he was willing, in his formal language, to eliminate some natural-language features which complicate logical studies of language. For example, he thought it was convenient to have every singular term denote a real object.

If we regard Frege's logical language as a canonical language that might be used to represent things in the world, then this language is perspicuous in various respects. Its simple or atomic sentences are ontologically perspicuous, because categories of expressions correspond to kinds, or categories, of things in the world and the sentences represent things as being combined in ontologically appropriate ways. Frege's basic ontology is represented by singular terms and predicates. The singular terms represent (or pick out) objects, while the predicates indicate features of objects. These

predicates, one-place, two-place, ..., n-place, ..., provided a notational solution to philosophical problems and perplexities about making sense of relations.

The formal language is *logically* perspicuous for having both an ontologically perspicuous substructure and readily apparent logical expressions to be used for constructing compound sentences. (Frege's clumsy notation could have been more perspicuous logically, and was soon replaced by more convenient expressions.) The perspicuity of Frege's logical language is *visible* or *visual*. We can tell from the symbols used and their spatial arrangement what they are being used to do. Artificial logical languages are primarily written languages, while ordinary language, natural languages, are primarily spoken. Think how difficult it would be to teach modern logic to students blind since birth; syllogistic logic would not present similar difficulties.

Although Frege's logical language is ontologically perspicuous with respect to what its atomic sentences are used to represent, it might not be ontologically complete. It could fail to provide expressions, or kinds of expressions, for every kind or category of thing that needs representing. We know from various of his writings that Frege thinks objects and functions, which include concepts, are fundamental. Singular terms pick out objects, while predicates function in sentences or statements much like concepts behave in reality. When functional expressions are combined with names, or object expressions, the combinations represent functions "completed" by objects.

But does he think events are just another kind of object, or do they constitute a distinctive category which should have a corresponding syntactic or grammatical category of expressions? How should his language be adapted or enlarged to accommodate tenses, and to represent temporal relations? I doubt if we can answer these questions for Frege, but we *can* say that, as far as it goes, his language is ontologically and logically perspicuous. He has shown us what a visually perspicuous logical language looks like. Going beyond Aristotle's interest in proof and demonstration, Frege has made it a goal for logic to develop ontologically and logically perspicuous artificial languages.

This new goal is a further development of Aristotle's goal or goals. Frege, like Aristotle, is concerned with proof and demonstration. But Frege is particularly concerned with what we might call the logical structure of language. What he wants to prove are logical principles, or logical truths. As it turns out, ontological and logical perspicuity are helpful both for pursuing Aristotle's more limited goals and Frege's more general ones. Middle terms in syllogisms are not the

key to understanding how it is that deductively correct arguments can enlarge our knowledge. The logical structure of our language depends on more than the ontology it encodes, but this structure is based on the ontology.

Ordinary language doesn't conceal, or camouflage, its logical structure. Frege was content, in "On Sense and Reference," say, to analyze ordinary expressions which aren't somehow "fronting" for a concealed logical substructure that is what really matters. The logical language is more representationally perspicuous than ordinary language because it highlights the logical structure visually, although it doesn't uncover this structure. The perspicuous language facilitates the deductive reasoning that Frege carries out with sentences of the language.

Frege's formal language can be explored by starting with evident logical principles, and proceeding from these by inferences that evidently preserve both truth and logical truth, to establish further logical principles. For Frege, an important feature of his language was that proofs of logical principles can be checked mechanically, eliminating any need for appeals to intuition as one proceeds.

### 3. LEŚNIEWSKI'S LOGICAL SYSTEM

When I was an undergraduate at Notre Dame, I took a symbolic logic course taught by Boleslaw Sobociński. He had taken one or more courses from Leśniewski before the Second World War, and had made his way to the United States following the war. Sobociński's course was devoted to a presentation of Leśniewski's system Ontology, although I think Sobociński preferred to call it the Calculus of Names. At the time, I had no idea what 'ontology' meant, or why the logical system was called that, and, as far as I can remember, Sobociński never told us. Speaking English wasn't so easy for Sobociński at that time, and he had very few conversational exchanges with members of the class. If he was asked to explain something, whatever he said was likely to be difficult to understand. His preferred method of teaching involved writing things on the board, which we copied. He wrote formulas and theorems and proofs.

I came to have a better understanding of Leśniewski's work when I was a graduate student, for I discussed his logical work in my dissertation, and was helped a lot by being able to borrow a copy of Eugene Luschei's then-recent dissertation about Leśniewski's logical systems. Luschei presented, and commented on, Leśniewski's rules (or directions) for constructing a system of Ontology. From Leśniewski's nominalistic perspective, there wasn't such a thing as *the* system of

Ontology. There were as many systems of Ontology as people actually constructed. The only systems of Ontology that there are are systems that one or another person constructs by writing them according to Leśniewski's directions. And each constructor is free to make her own choices of many of the symbols to be used. My better understanding of what Leśniewski was up to did not include understanding why the word 'Ontology' was a good one for him to use for labeling his logical system.

Now I think I do understand. Following Frege, coming up with an ontologically and logically perspicuous formal language came to be regarded as an important part of investigating modern logic. Since Leśniewski was a dedicated nominalist rather than an upper or lower case 'p' platonist, he designed a logical language suited for representing the world as he understood it to be, and he formulated a deductive system that facilitated making perspicuous derivations of logical principles "governing" the logical language. The syntax for his language and deductive system was presented in his Terminological Explanations, which are really directions for someone to follow in constructing (writing down) a system of Ontology. The directions provided for both the language and its development in the deductive system.

In Leśniewski's formal language, the basic category of expressions for objects is common nouns, or names, that stand for zero or more objects. The most basic atomic sentences are obtained by combining two names with the Greek letter epsilon:  $\epsilon$ . This is not the epsilon of set membership, which I will write like this:  $\epsilon$ . The Ontological epsilon is written between two nouns to make a sentence like this:  $[a \epsilon b]$ , which is used to say that the single  $a$  is a  $b$ . If there are no  $a$ 's, or if there is more than one  $a$ , the sentence is false. The sentence is true if there is exactly one  $a$ , which is also a  $b$ . There is no fundamental category of singular terms, but when the writer understands a common noun of Ontology to stand for just one object, he can indicate this informally by using an upper case letter as a noun like this:  $[A \epsilon b]$ . If both 'A' and 'B' are names of single objects, then we can write  $[A \epsilon B]$  to indicate that these are the same object.

The Ontological epsilon is the only primitive symbol in Lesniewski's formal language that can be used to say that an object exists. Ontology has indefinitely many semantic, or grammatical, categories, and for each category there are variables belonging to that category, and universally and particularly quantified phrases which contain variables belonging to that category. A single quantified phrase can contain more than one variable, and the variables it contains can belong to different categories. Leśniewski understood quan-

tification substitutionally rather than referentially, which seems appropriate for a nominalist.

I don't think Ontology provides as convenient a formal language as do familiar systems of first-order, or higher-order, logic, at least not if we wish to capture features of natural languages. In English and other familiar natural languages, names and perhaps all singular terms constitute a distinctive category of expressions. In describing the world and its goings on, we pick out particular objects and characterize these objects, as well as indicating how they are related to one another. It is important to distinguish names and descriptive singular terms from ordinary common nouns. Names and other singular terms aren't common nouns that just happen to denote exactly one object. They are the very expressions we need for picking out the particular objects we want to characterize.

We *can* say things like the following:

There are two Arnolds in this class.  
 I never met an Arnold whom I liked.

but in these cases, the name isn't used in a typical way. In these cases, the speaker is using the name to mean *person named "Arnold."*

Leśniewski may not have cared about "capturing" the logic of ordinary language. By choosing the name 'Ontology' for his own system, Leśniewski was simply signaling his intention that the languages of those systems reflect or represent his own philosophical view. But no one anymore employs Leśniewski's formal language or deductive system.

#### 4. FREGE'S BEGRIFFSSCHRIFT

In this work, Frege presented his fundamental logical system (or systems). In the language on which his system is based, the simple, or atomic, sentences are composed of names, or singular terms, and predicates. Frege doesn't in *Begriffsschrift* say anything about this language being ontologically perspicuous, but the language is surely intended to accommodate the kinds of expressions we use to pick out and characterize objects in our ordinary languages. For he provides us with singular terms for objects, and with n-place predicates for the concepts that objects in the world fall under. These predicates accommodate relations easily, something that Aristotle's logic couldn't accomplish.

Frege takes more care to ensure that his logical language provides a perspicuous representation of the speech acts, or language acts, that we perform than he does to let us know

that he has captured or represented the basic kinds of things that the world contains. He doesn't provide just names and predicates, connectives and quantifiers, but he also prefixes his sentences with *content strokes* and *judgment strokes*. An earlier analysis of our mental operations had recognized only three operations: conception, judgment, and reasoning. On this understanding, we begin by conceiving of objects and their features, then we combine our concepts to make judgments about the ways things are, and finally we reason from some judgments to further judgments.

Frege was sure that more than three operations are involved. After we conceive of objects and their features, we must assemble propositional items we can simply consider before we judge these to be or not be the case, then we pass judgment, and then we reason. Frege designed his formal language to reflect the mental operations we perform with expressions of that language. The vocabulary represents the conceptual element. When expressions are combined to form a sentence, that sentence is prefixed with the content stroke which represents the act of combining them. Once the sentence or statement is judged to be the case, the content stroke is prefixed with the judgment stroke. The content stroke and judgment stroke together constitute the sign of assertion:  $\vdash$ .

In providing the content stroke and the judgment stroke for his logical language, Frege was attempting to increase the ontological perspicuity of his formal language. His design of simple sentences provided ontologically perspicuous representations of objects as having properties and being related. His logical symbols were not entirely perspicuous presentations of the logical structures of his compound sentences, and his strokes were his attempt to provide ontologically perspicuous presentations of the speech acts or language acts being performed by the speaker, or language user.

But Frege's content stroke isn't needed, for the effect of using that stroke is achieved by assembling component expressions to produce a well-formed sentence (or schema). The assertion sign does have a role to play, however, for it makes the assertive force of the speaker's act explicit.

When Frege developed his logical system, each axiom and theorem was prefixed with the sign of assertion. But this sign was generally not understood, and eventually became used to signal other things than Frege had intended. The real problem is that, when Frege develops his deductive system by proving results, the content stroke and the judgment stroke don't do any work. The work of the content stroke is accomplished simply by writing a well-formed sentence or sentential expression. All of Frege's axioms and theorems are



either schemas whose instances are logical truths or general statements to the effect that all sentences/statements having the form displayed are logical truths. The system codifies logical truths, and providing a notation to indicate that Frege judges his theorems to be the case is unnecessary.

But Frege did have a good idea when he introduced symbols for making explicit the ontological status of the speech acts, or language acts, that the speaker is performing. Borrowing Austin's terminology, we can say that the act indicated by Frege's content stroke, the act of assembling expressions to make a significant statement, is a *locutionary* act, and the act of asserting that statement is an *illocutionary* act. In speaking, writing, or even thinking with words, we perform many different types of illocutionary acts. We assert statements, deny statements, and suppose statements to be or not to be the case. Assertions, denials, and suppositions are all illocutionary acts.

We also use sentences to make requests, to make suggestions, to give orders, to give advice, to make promises, to get married, to christen ships, and on and on. These are all different kinds of illocutionary acts. Illocutionary acts are the "units" of significant speech, of the significant use of language more generally. Long before Austin, Frege recognized locutionary and illocutionary acts, and provided for them in his notation. This was insightful, but went largely unnoticed, and didn't play an important role in Frege's own thought.

Since in Frege's logical system, he was only concerned to assert logically true statements, it wasn't instructive or enlightening to make this explicit. But if Frege had formulated a natural-deduction system instead of his axiomatic deductive system, then he might have helpfully introduced different symbols to indicate whether a statement is being asserted, or denied, or merely supposed to be the case. Making and discharging suppositions are essential to reasoning by natural deduction, and in that context it is enlightening to notationally distinguish assertions (or denials) from suppositions.

That is actually what I am trying to accomplish in my own work dealing with *illocutionary logic*. Until I set out to write this little essay, I wasn't particularly conscious of the ontological character, or the ontologically explicit character of my research. Now I see that in future work, I should highlight this character.

## 5. SPEECH ACTS, LANGUAGE ACTS, DOCUMENT ACTS?

We use language when we speak out loud, or when we write things, or even when we think using words and sentences.

When we speak out loud, we make sounds, when we write or type we make marks or visual patterns of some sort, and when we think with words, we presumably produce and employ neural events (without being consciously aware of those events). We also use language when we listen with understanding to someone else, or when we read. These are all examples of what I call speech acts, or language acts. The word 'speech' may be slightly misleading, but this isn't an obstacle to communication. In discussions of speech acts, it is common to restrict one's attention to those acts performed by the person who produces the expressions that are used, but I won't do that here.

Some philosophers think that people use language to introduce conceptual structure into the world, and to impose this structure on the world. I am sympathetic to that view, but I won't defend it here. However, I do think it is evident that people do, and must, perform acts when they say meaningful things by producing expressions and when they use expressions they encounter, for example when they hear or read these expressions, in appropriate meaningful ways. We can utter a name to refer to a particular object, and we can respond to someone else's utterance of that name by directing our attention to the referent. In either case we are performing a meaningful act. In either case, the act we are performing is a concrete entity, not an abstract one.

John Searle has developed a theory of how people create institutions, or institutional reality, by producing expressions and using them to perform certain types of collective speech acts. Barry Smith thinks that Searle has trouble reconciling that account of institutional reality with Searle's naturalism. According to Searle (as reported by Barry in Smith 2014), "Everything in the universe 'consists entirely of physical particles in fields of force.'" So, apparently, Searle really thinks that all of social reality is the product of "massive fantasy." Social reality isn't really real.

Barry is certainly right that such a view isn't satisfactory. But Barry thinks that the way to get out of, or around, Searle's difficulty is to introduce "quasi-abstract" entities into our ontology. I'm not sure I even understand this, but it does seem to be the case that what Barry calls "document acts" have some important role to play in producing and maintaining social institutional reality. What can these acts be?

In his paper "Document Acts" (Smith 2014, p. 19), Barry explains that document acts are "acts in which people use documents, not only to record information, but also to bring about a variety of further ends." Later in that page, he says that by 'document act' he means "*what humans (or other agents) do with documents*, ranging from signing or stamp-

ing them, or depositing them in registries, to using them to grant or withhold permission, to establish or verify identity, or to set down rules for declaring a state of martial law. Acts of these sorts deal with documents in ways which reflect the status of the latter as documents (rather than as, for example, mere pieces of paper)” (ibid).

I am willing to agree that documents are both interesting and important. But can the same be said of document acts? We could also recognize a kind of act we call ‘automotive acts’ or ‘automobile acts,’ which include all the things that people do with cars: start them, drive them, turn left in them, change their oil, repair them, run over people with them, go to the movies in them. Wouldn’t it be simpler just to talk about cars instead of dealing with this strange category of acts?

Barry talks about document acts in some of the same ways that Searle talks about speech acts, especially in ways that Searle talks about those acts that give rise to institutions. In a chart with two columns, one for types of document and the other of entities created by document acts performed with those types of document, Barry indicates that contract acts create obligations, marriage license acts produce the bond of matrimony, and that a registration of baptism act creates a legal name. Can any of these things be true?

What is a contract act anyway? It can’t be the act of two or more parties signing a contract, for that is a more ordinary kind of speech act/language act. And that act only exists while the signing is going on. Isn’t it more accurate to say that the parties’ signing the contract signal their agreement to abide by the terms of the contract, and that the signed contract is a record of that agreement? Their agreement itself is legally binding, but we need the contract to record and remind us of that agreement, and of what exactly was agreed to. We can, of course, do different things with the contract, but is it useful or helpful to lump together all the things we can do under the heading ‘contract act’? A contract act isn’t a very specific kind of act, although many of the things we can do with a contract are more ordinary types of speech acts or language acts.

Consider the marriage license I have to record my marriage to Jane. If that license is lost or destroyed, do we cease to be married? Suppose further that all records of our getting married are lost or destroyed. Would that end the marriage? No one thinks so. Documents and records of various sorts are certainly essential for our highly complex modern societies. These are often documents and records which concern one or another type of language act. But the documents and

records are not themselves acts of some kind. We keep documents, but we don’t perform them.

It was a big advance for human beings when they invented language and learned to perform speech acts. It was another big advance, but not quite as big as the first, when people developed written languages. That made it possible to record information, save it, transmit it to people at distant locations, and so on. It was also an advance when material to write on and instruments to write with became readily available. Each of these advances made it possible for people to do new things, to perform new kinds of act or action. But the advances themselves aren’t acts of some kind, and neither are the documents that record acts already performed or enable acts that will or might be performed.

## REFERENCES

- Austin, J. L. (1965). *How to Do Things with Words*. New York: Oxford University Press.
- Frege, G. (1879/1967). *Begriffsschrift: A Formula Language, Modeled Upon That of Arithmetic, for Pure Thought*. In: J. van Heijenoort (Ed.) *From Frege to Gödel: A Source Book in Mathematical Logic, 1879-1931*. Cambridge, MA: Harvard University Press, pp. 1–82.
- Kearns, J. T. (1997). Propositional Logic of Supposition and Assertion. *Notre Dame Journal of Formal Logic*, 38: 325–349.
- Kearns, J. T. (2006). Conditional Assertion, Denial, and Supposition as Illocutionary Acts. *Linguistics and Philosophy*, 29: 455–485.
- Kearns, J. T. (2016). The Larger Logical Picture. In P. Arazim and M. Dancak (Eds.) *The Logica Yearbook 2015*. London: College Publications, pp. 107–116.
- Searle, J. (1995). *The Construction of Social Reality*. New York: Free Press.
- Smith, B. 2014. Document Acts. In: A. Konzelmann-Ziv and H. B. Schmidt (Eds.) *Institutions, Emotions, and Group Agents: Contributions to Social Ontology* (Philosophical Studies Series). Dordrecht: Springer, pp. 19–31.

# On Not Being Influenced by Barry Smith's Ontologism

RUDOLF LÜTHE

Philosophisches Institut  
Aachen University (RWTH Aachen)  
Eilfschornsteinstr. 16  
52062 Aachen  
Germany

Email: [rluethe@gmx.net](mailto:rluethe@gmx.net)

Web: <http://www.philosophie.rwth-aachen.de/aw/cms/home/themen/praktische-philosophie/copy-of-personen/~ttn/rudolf-lueth/?lang=de>

**Keywords:** Barry Smith, Kant, idealism, skepticism, realist phenomenology, ontology

Barry Smith is an honourable man. And I must add: he was—and probably still is—ambitious. It is this ambition that made him travel from England to continental Europe each summer, when he was still a young scholar of philosophy. On these occasions he soon developed the habit of having his first stop on the continent at our house in Aachen before he went on to meet more important and influential phenomenologists in Eastern Europe, particularly in Poland and Hungary. Then on his way back to England, our home generally was his last stop on the continent.

This is how we met, and how we started our discussions on many different subjects, only to find that we disagreed about nearly every issue. Strangely enough, this structural disagreement became the basis of a longstanding friendship that was, at least for me, inspiring in a very special way: the more Barry attacked my philosophical positions and my political views, the more I was convinced that I was right, for even his brilliant mind could not convincingly prove that I was wrong. Barry has probably felt somewhat similar. Therefore, neither of us changed our views in spite of all these discussions and arguments. He remained a realistic phenomenologist and a formal ontologist, while I stayed what I had been before he entered my intellectual life: a transcendental philosopher in the Kantian tradition and a skeptic.

I know that Barry regarded some of the convictions he (wrongly) attributed to Kant's idealism as proof of some mental disease, while I thought of his realism as an instance of an astonishing naivety. I never really understood the fundamental value of formal ontology, but I was deeply im-

pressed by how successfully Barry operated in this area of research. I always thought of him as a dogmatic realist, while he regarded me as a skeptical idealist. On this basis we got along very well with each other.

Although we did not live and work together in a very close way during the first years of our friendship, we met regularly at small conferences that Barry (in cooperation with Peter Simons and Kevin Mulligan) organized in England, Scotland, and all over Western and middle Europe. I was grateful for the chance to participate in these lively intellectual endeavors, and also for the opportunity to practice my English. Indeed, on some of our common travels, I spoke in English to Barry while he answered in German.

There have been, however, two occasions in which we worked together at the same academic institutions. The first of these was the two years we spent together at the very small and very special International Academy for Philosophy in the Principality of Liechtenstein (July 1991–June 1993). The director of this (not officially) Catholic institution, the Austrian scholar Josef Seifert, defended the most questionable positions of Catholic theology by making specific use of Husserl's realistic phenomenology. So during those two years in Liechtenstein, the friendship between Barry and I proved vital to our academic and intellectual survival. Only a few months after my arrival we were both under attack, though for very different reasons: I was branded as a dangerous skeptic, while Barry was regarded as too ambitious, striving towards a higher position within the hierarchy of the "Academy." In our not-chosen roles as academic warriors, we helped each other in our different fights. Here

Barry proved (as he would in other situations as well) to be a very good friend, reliable and supportive. In the end we both left Liechtenstein in the middle of the year 1993. I accepted visiting professorships in Zurich (Switzerland) and at Emory University in Atlanta (Georgia) before going back to Germany for a full professorship at the University of Koblenz. Barry, however, did not go back to England. Instead, he accepted a full professorship at SUNY Buffalo, where he still teaches today.

Some years after this forced separation, we used our new power to invite each other to visiting professorships at our respective universities. So Barry came to Koblenz for the spring term of 2000, while I spent the fall term of 2001 at SUNY Buffalo. On several other occasions Barry has also invited me to give talks at Buffalo. He came to visit us at our private home when he was traveling through Western Europe as well.

Despite our longstanding friendship, however, there is not a single book in which essays from both Barry and I are published together. Philosophically, we do not fit together easily. Barry nonetheless managed to place two of my early essays into the *British Journal for Phenomenology*; he was and still is a very gifted organizer.

Meanwhile, I somewhat lost track of his recent work. From my specific point of view some of it seems far from what my traditional conception of philosophy expects a philosopher to do. But as Barry once told me, by giving formal ontology a pragmatist turn, his work has become influential in areas like medical information and geography (and maybe many others). So, Barry obviously has found his specific position in our modern times in general and in the academic world in particular. I am convinced that he deserves his success, and I hope that it will finally satisfy his ambition.

I cannot, however, finish this short essay in honor of Professor Barry Smith without mentioning that, according to my own theory of friendship, Barry—in spite of being a very good friend—is at the same time a very difficult one. On the one hand he is absolutely reliable, trustworthy and supportive. On the other hand, he does not have much time for cultivating friendships; there are always more important things that urgently need to be done, all of them parts of his work. In general, “work” seems to be the key word in Barry’s life. He has achieved a lot by being such a diligent and dedicated scholar. Nonetheless, as a friend, I truly look forward to a possible period of time when Dr. Barry Smith will feel important enough without hopping from conference to talk and back again, before flying home only to place himself in

his private or his official office to start with even more important work.

I know for sure how entertaining Barry can be when he takes the time to socialize. On one occasion during his stay in Koblenz, we were having a party, probably his farewell party. In its course we started a competition in the spontaneous creation of limericks in English. Here Barry very quickly came up with a “prize winning” poem that surprised everybody with both its comical strength and its daring rhymes. Please allow me to quote this masterpiece of stand-up comical rhyming by heart:

There was a young man from Koblenz  
Who fell into the Rhine in a frenzy  
They dragged him out fine  
He was full of red wine  
And drove home in his Mercedes Benzy.

I could cite many other examples of Barry’s talent for comical entertainment. They would convincingly prove that he is not a man with only one sort of competence. It would be so good if Barry, at some stage in his life, used more of his time to cultivate all of his other non-academic talents. But then again, every human being has his one specific road to happiness. And in this respect, too, our personalities and convictions are widely different.

# Minimal Aristotelian Ontology

LUC SCHNEIDER

IFOMIS  
Universität des Saarlandes  
Postfach 151150  
D-66041 Saarbrücken  
Germany

Email: [luc.schneider@ifomis.uni-saarland.de](mailto:luc.schneider@ifomis.uni-saarland.de)  
Web: <https://www.linkedin.com/in/lucschneider/>

**Keywords:** Barry Smith, formal ontology, applied ontology, Aristotelian Ontological Square, SNAP, SPAN, Rudolf Carnap, Peter Frederick Strawson, ontological minimalism, descriptive metaphysics, substances, *entia minora*, universals, time

## INTRODUCTION

Barry Smith is a man of such strong views that his greatest impact on other researchers, especially if these are equally opinionated, may be the often forceful resistance his ideas are met with. Occasionally, however, after having interacted with him, with hindsight one realizes that he changed one's mind after all, even though one's first reaction may have been one of loathing. Thus, it is to Barry that I owe my having become an Aristotelian, but before anything else, he may have prevented me from abandoning philosophy for computing science. It was in 2001, during my stay as research associate at the Italian National Research Council in picturesque Padua, and while I was involved in the development of the foundational ontology DOLCE,<sup>1</sup> that I became aware of the work of the Mancunian brothers-in-arms Barry Smith, Kevin Mulligan and Peter Simons, as exemplified in particular by the volume *Parts and Moments* edited by Barry in 1982. I was immediately charmed and won over by their staunch and apt defense of a rich Aristotelian metaphysic which not only allows for universals and particulars alike, but recognizes substances as well as dependent *entia minora* or *moments*. The contrast with the Quine-Davidson tradition in which I had been previously raised as a philosophy student was truly mind-blowing, and when Barry founded the Institute for Formal Ontology and Medical Information Science at the University of Leipzig, I gladly seized the opportunity to join him there as a Humboldt fellow in 2002. This decision marked a turning point in my life, even though I was definitively converted to a rich Aristotelian ontol-

ogy only later, while writing my Ph.D. under the joint supervision of Barry and Kevin Mulligan at the University of Geneva between 2003 and 2007.

If there is one paper among the whole body of Smith's work I would have to cite as having had the most lasting influence on the orientation of my research, it is his 1997 article "On Substances, Accidents and Universals: In Defence of a Constituent Ontology." Indeed, with this essay Barry revived an ancient conceptual framework that Ignacio Angelelli (1967, p. 11ff; 1991, p. 12) has named the "Ontological Square,"<sup>2</sup> a four-fold division of entities suggested<sup>3</sup> in Aristotle's *Categories* 1a20–1b10 which is based on two orthogonal distinctions, namely:

- 1 being in a subject vs. not being in a subject, i.e. *attributes* vs. *substances*, and
- 2 being said of a subject vs. not being said of a subject, i.e. *universals* vs. *particulars*.

The cross-wise combination of these dichotomies results in a categorial scheme which comprises universal and particular substances, i.e. *kinds* and *objects*, as well as universal and particular attributes, i.e. *characters* and *moments*:

	Substances	Attributes
Universals	Kinds e.g. Man	Characters e.g. Wisdom
Particulars	Objects e.g. Socrates	Moments e.g. Socrates' wisdom

Universal substances or kinds (e.g. Man) are instantiated by particular substances or objects (e.g. Socrates). Particular attributes or moments (e.g. Socrates' wisdom) are cases or tokens of universal attributes or characters (e.g. Wisdom). Moments are said to inhere in objects, e.g. Socrates' wisdom inheres in Socrates.

The Aristotelian Ontological Square has been later on advocated as a foundation for natural science by the late E. J. Lowe, notably in his "The Four Category Ontology" (2006). Though this book greatly inspired me, it is Smith's 1997 essay which has started my own obsession with the subject. And if I have developed a Logic of the Ontological Square (Schneider 2009; 2010), this is also due to Barry's consistent attacks against fantology (Smith, 2005), the idea that ontology can be simply read off the logical form of standard predicate calculus.

Meanwhile, Barry himself, however, has moved on to a Six Category Ontology consisting of objects, moments and processes as well as their respective universals (Smith 2005; Arp, Smith, and Spear 2015). I believe that the most appropriate way to acknowledge my deep indebtedness to Barry's work and encouragement is to revisit some issues that have always troubled me and with respect to which I respectfully beg to differ with Barry as his loyal, if slightly dissident, student.

The topics related to the Ontological Square I will discuss in this contribution are the following:

1. How can the choice of such a rich ontological scheme be motivated beyond mere considerations as to its applicability within information science?
2. How can the Ontological Square be formally reconstructed?
3. How can we do justice to time and change within the Ontological Square?

The first question is intimately tied to the issue of realism dear to Barry, and my heretical answer will be a combination of Carnapian deflationism and Strawsonian descriptivism. It is also in the spirit of ontological deflationism or minimalism that the second question will be tackled, i.e. by providing a set of uncontroversial introduction and elimination rules for the various ontological categories. Thus, *pace* Barry, the completeness of the Aristotelian Ontological Square can be shown in a purely formal manner. Finally, my response to the third problem will commit me to a form of fragmentalism (cf. Fine 2005, 281–284), for the general framework of the Ontological Square has to be instantiated in infinitely many temporal ontologies which merely differ in the reference of

the uniquely designating expression "the present moment." To use Barry's terminology, I declare my latish conversion to SNAP (Grenon and Smith 2004), without however adopting SPAN (*ibid.*). In fact I will argue that, *pace* Barry Smith, the passage or flow of time cannot be captured, but shows itself exclusively in the succession of presentist ontologies.

## 2. JUSTIFYING THE ARISTOTELIAN ONTOLOGICAL SQUARE

### 2.1 The question of realism and ontological minimalism

The most immediate way of arguing for the choice of a given theory, respectively ontology, is to maintain (putting one's foot down) that it corresponds to reality, that it describes how reality is. Barry has tirelessly defended this position throughout his career, and even argued that realism is a methodological *sine qua non* for building good scientific ontologies (see Smith and Ceusters 2010). However, the realist notion of a correspondence to the world is open to anti-realist challenges.<sup>4</sup> Unfortunately it does not do to reply to these attacks by providing an ontological account of truth as correspondence, since this essay is immediately questioned by anti-realists as "yet another theory," the correspondence of which to reality is an open question in turn. It is easy to see that these moves initiate a potentially endless argumentation game of challenges and parries (cf. Smart 1995) in which it remains ultimately undecided whether it is the realist or the anti-realist who ends up bearing the burden of proof, let alone who eventually wins the argument.

A popular escape from potentially endless debates is to deflate them, and I plead guilty of having ended up sitting with the deflators on the question of realism. Indeed, according to ontological deflationists or minimalists such as Rudolf Carnap (1950/1956) and Amie Thomasson (2015), existence questions fall into two sorts:

- they are either answerable by trivial inferences from uncontroversial empirical or conceptual premisses (such as the inference from "there are tables" to "there are material objects"), *or*
- they are really questions about the appropriateness to adopt a certain linguistic framework in which such existence claims can be stated.

This strategy has the advantage that objections to certain existence claims can be countered in two ways: either they can be rejected as plainly conflicting with the rules of use

that authorize the introduction of the contested entities, or they can be charitably re-interpreted as actually questioning the linguistic framework itself of which these meaning-constitutive rules are part. Therefore, the problem of justifying ontological commitments is ultimately to be settled by pragmatic considerations regarding the advantages and disadvantages of choosing a particular language which allows to state the existence of disputed entities.

Thus, ontological minimalism does not so much consist in deflating existence questions than in defusing ontological debates about existence claims regarding contested entities inasmuch as these claims are the conclusions of uncontroversial inferences within a given linguistic framework. In essence, the contestator is being faced with the inconsistency of wanting to have the cake and eat it: one cannot dispute the existence of entities of a certain class while using a language the rules of which allow referring to or quantifying over these entities.

Ontological minimalism goes hand in hand with a modest view of the role of philosophy in general and of ontology in particular that was dominant before the second half of the last century both within phenomenology and within analytic philosophy (Thomasson 2015, pp. 4–13). Briefly stated, the division of work between philosophy and science was perceived as follows: while the former uses conceptual methods, i.e. recurs to linguistic and/or conceptual analysis in order to clarify the meaning of notions that are central to scientific inquiry and everyday practice, the latter applies empirical methods to the investigation of matters of fact.

According to Thomasson, this modest view of ontology is best illustrated by Carnap's (1950/1956) approach to existence questions. Carnap distinguished *internal questions* from *external questions*, a distinction that echoes the dichotomy of *using* vs. *mentioning* terms. Indeed, while *using* terms referring to certain entities according to the rules of a given language, existence questions can be uncontroversially answered either by conceptual analysis or by empirical methods. So the question of whether a certain biological species exists can be tackled by empirical observations, while the problem whether there is a prime number between 17 and 23 can be figured out by mathematical calculation. Furthermore, from the statements "there are platypus" or "there is a prime number between 17 and 23" one can trivially infer "there are organisms" respectively "there are numbers." Now, within a language the rules of which license the inference to existence claims regarding certain entities such as numbers or properties, one cannot sensibly question the existence of the very same entities while using the terms that

are supposed to refer to them. However, the contestator may be charitably interpreted as *mentioning* these terms and as questioning the rationale of choosing a linguistic framework that permits the statement of those existence claims (Thomasson 2015, pp. 12, 39–44).

Hence Carnap's treatment of existence claims implies a simple realism about any entities the existence of which can be established according to the rules of the language that is respectively used (Thomasson 2015, p. 145f). Concurrently it also leads to a form of deflationism about philosophical debates concerning the existence of certain sorts of entities, since any such debate is spurious, not because the discussants are talking past each other, but because existence questions can be so easily and straightforwardly answered (Thomasson 2015, pp. 158–160).

It should be emphasized that Carnapian minimalism does not lead to relativism about existence and truth: that the meaning of terms like *planet* is dependent on the linguistic rules that govern the use of these terms does not imply that the truth of the statements "there is a planet between Mercury and Earth" or "there are planets" is a matter of linguistic convention (Thomasson 2015, p. 60). Furthermore, Carnap's approach does not presuppose a clear-cut distinction between analytic and synthetic propositions, but is compatible with there being a spectrum of intermediary cases (Thomasson 2015, p. 53 fn. 18). Finally, Carnapian minimalism is not committed to quantifier variance, but embraces the idea of existence as a univocal, formal notion governed by a fixed set of rules (Thomasson 2015, pp. 63–80).

## 2.2 Descriptive metaphysics to the rescue of ontological minimalism

The most serious objection to ontological minimalism is that it involves an element of arbitrariness as to the linguistic or conceptual framework in which existence questions are couched. But if it is a matter of arbitrary choice which language we adopt, then so is also the range of existence questions we may ask (Thomasson 2015, pp. 41–42).

Of course, Carnap and Thomasson do argue that this arbitrariness is only apparent, since it is a practical issue which language we choose in a certain context (Thomasson 2015, p. 42). The choice of linguistic or conceptual framework is thus determined by our purposes (e.g. to account for biological phenomena), but is also informed by theoretical considerations (e.g. as to the simplicity or fruitfulness to use a certain language in describing a given range of empirical phenomena). Nonetheless, though the decision to use a linguistic framework that allows for stating and answering certain

existence questions may not be totally arbitrary, there are doubtlessly many sorts of purposes one may want to achieve, and also a multitude of theoretical considerations that one may consider relevant. Hence, ontological minimalism does seem to imply ontological pluralism after all.

This may be a welcome consequence to some—certainly to me—since it allows for an equable attitude towards the maze of drawn-out debates about minutiae that lately seem to obstruct real progress in analytic ontology. Nonetheless, there undoubtedly remains the impression of an embarrassment of metaphysical choice. This feeling might be mitigated if one could identify a linguistic framework that is fundamental in some sense to every discourse. Now, it can be argued that ordinary language discourse underpins human practice in all its forms, and thus is prior to the specialist idioms of arts and sciences, which can be regarded as outgrowths of everyday speech. Therefore, while ontological pluralism seems to be an unavoidable consequence of ontological minimalism, it is possible to single out ordinary language as a linguistic framework presupposed by every kind of specialized talk, be it formal or informal. To put it in Austin's words: Ordinary language may not be the last word, but it should be the first (Austin 1979, p. 185).

It has to be pointed out, though, that the purpose cannot be to simply read off ontology from ordinary language use. It is more fruitful to focus on the underlying conceptual structures that constitute the preconditions of speech acts, in particular acts of referring and asserting. The task of identifying and analyzing these conceptual structures is incumbent upon descriptive metaphysics (Strawson 1959, pp. 9–10), which perfectly complements ontological minimalism.

Indeed, ontological minimalism and descriptive metaphysics agree on the view that the task of philosophy is to elucidate the structure of our thought, to trace the connections between our concepts in order to clarify the latter's function (Strawson 1992, 19), and to uncover the fundamental features of our conceptual and linguistic framework (ibid., 24). Now, this view starkly contrasts with the stance defended also by Barry that formal ontology uncovers the structure of the world; according to him, conceptual analysis as described above is a form of Kantianism. What is meant as an insult would only constitute an objection against descriptivism if the focus on our concepts implied an adoption of anti-realism. However, as already pointed out above, Carnapian minimalism does not imply relativism as to existence and truth. Moreover, conceptual analysis as defended by Strawson (and most recently by P. M. S. Hacker 2010) is compatible with the tenable core of the correspondence con-

ception of truth, i.e. what Paul Horwich (1998, p. 104f) has called “the correspondence intuition”, namely that our beliefs, including our ontological presuppositions, are the causal result of our exposure to or interaction with the world, be it through observation or through instruction by our peers (Strawson 1992, p. 95). Properly understood, Kantianism does not conflict with realism.

### 2.3 Descriptive metaphysics as Aristotelian ontology

As it has already been pointed out by MacMahon (1977), Strawson's descriptive metaphysics naturally provides the tools for reconstructing the Aristotelian Ontological Square. In fact, the distinctions within the Ontological Square can be motivated by considerations on the nature of acts of assertion (Strawson 1959, pp. 167–170). Asserting a proposition is tantamount to asserting a non-relational tie between terms, thus grounding the unity of the proposition.<sup>5</sup>

A term can be said to “collect” the entities of which it can be assertively tied to (Strawson 1959, p. 167). Each entity referred to by a term can thus be regarded as a principle of collecting other entities. Therefore, basic classes of entities can be distinguished in terms of the ways in which they collect other entities. For the purposes of the argument, we only need to take into account non-relational ties (1) between universals and particulars and (2) between particulars.

Let us first consider the case of universals collecting particulars and vice versa. A universal (e.g. Man, Wisdom) may collect an unlimited number of particulars (e.g. Socrates, Plato, Aristotle), but a particular (Plato) may equally collect innumerable many universals (Wisdom, Man, Philosopher, etc.) (Strawson 1959, p. 169). The difference between universals and particulars consists in the fact that particulars collect universals in virtue of their continuous identity (ibid.), while universals collect particulars in virtue of conferring them a resemblance (Strawson 1959, pp. 169, 170). In other words, a particular collects a set of universals simply by being the very same subject that the latter can be said of, while a universal collects a set of particulars, namely its extension, by being a resemblance maker for these particulars.

Amongst particulars we can differentiate between *objects* and *moments*: objects (e.g. Socrates) can collect an unlimited number of other particulars, especially moments (Socrates' wisdom, Socrates' baldness), while moments can be assertively tied to one particular, namely an object, only. Moments are *non-transferable* in the sense that they are specific to one object (or, in the relational case, to one series of objects) only.

Amongst universals we may distinguish between sortal universals or *kinds* and characterising universals or *charac-*



ters. A kind (e.g. Man) provides a principle of distinguishing, counting, and grouping together *objects* which does not presuppose the latter being already distinguished, counted or grouped together by another principle. A character (e.g. Wisdom), by contrast, may only provide a principle of counting and grouping together *objects* in virtue of them being already grouped together by another principle, i.e. ultimately by a kind (Strawson 1959, p. 168).

Particulars, whether objects or moments, are akin to characters inasmuch as they may only collect other particulars provided these are already distinguished or distinguishable by (other) universals.

Finally, characters not only collect objects, but also moments: indeed, whenever a character is assertively tied to an object, a moment that is collected by the character is also assertively tied to that object. Thus, that Socrates died implies there having been a moment, namely a particular death, that inhered in Socrates (Strawson 1959, p. 168). To sum up, then, we can distinguish between four non-relational ties that articulate the Ontological Square (cf. Fig. 1):

1. *instantiation*: an object *instantiates* or is an *instance of* a kind;
2. *tokenization*: a moment is a *case* or a *token of* some character;
3. *exemplification*: an object *exemplifies* a character;
4. *inherence*: a moment *inheres in* an object.

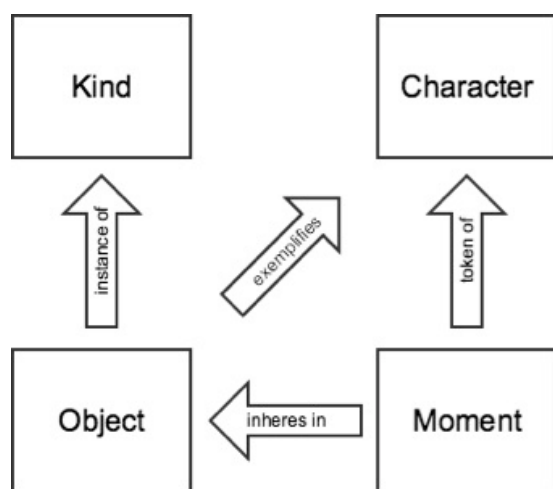


Fig. 1: The Ontological Square

The preceding reflections only constitute an *informal motivation* of the distinctions that make up the Ontological Square. A *formal justification* shall be provided in the shape

of introduction and elimination rules of respective existence claims within a formalisation of the fragment of ordinary language discussed above.

### 3. RECONSTRUCTING THE ARISTOTELIAN ONTOLOGICAL SQUARE

#### 3.1 From features to objects

The deflationist approach to ontology sketched above is spelled out in a series of languages, each member of which, with the exception of the starting point, is a conservative extension of its predecessor in virtue of two operations:

1. the addition of *individual terms of a new category* to the alphabet of the predecessor,
2. the addition of *introduction/elimination rules* for statements involving these new terms, supplemented by further *auxiliary rules* governing the predicates that occur in these statements as well as by *definitions*.

The introduction/elimination rules play the same role in our version of neo-Carnapian deflationism as the instances of Thomasson’s (2015, p. 86) core rule for the term “exists,” according to which Ks exist if, and only if, the application conditions actually associated with the term “K” hold. These rules are certainly at the heart of ontological deflationism, but I agree with Evnine (2016) that they are not sufficient for providing a complete basis for the use of the terms that are introduced. In order to be able to infer properties of the admitted entities beyond those explicitly stated on the right-hand side of the introduction/elimination rules, one needs to adopt further rules and definitions. Here one may draw an analogy to the fact that deflationism about truth needs recursive rules in addition to the instances of the T-schema “<p> is true if and only if p” in order to offer a satisfactory framework for semantics.

The logical starting point for this successive enlargement is a language  $L^F$  in which no individual terms occur altogether. This would be a *feature-placing* language the well-formed formulae of which correspond to statements of a “naming game” such as:

- Rain(ing) here now!
- Water here now!
- Coal here now!
- Rabbit here now!

- Scent of roses here now!
- Red here now!

that simply protocol the apparition of subjectless features within the sphere of conscious experience (Strawson 1959, pp. 202–203). These features may be that of homogeneous stuffs, as in the case of “water” or “coal,” of heterogeneous patterns of spatial or temporal occupation, as in the case of “rabbit,” or of qualia such as “scent of roses” or “red.”

It should be emphasized that features are not properties of space-time points, since the spatial and temporal adverbs appearing in the statements of a feature-placing language are to be regarded as sentential, namely modal operators. I shall return to the issue of temporal modality further below. So let us consider the atomic well-formed formulae of  $L^F$  as corresponding to single-word phrases in natural language. More precisely, the predicates of  $L^F$  are all anadic, and thus by themselves constitute the atomic sentences of  $L^F$ .

The feature-placing language  $L^F$  can be extended to an object-centered language  $L^O$ , which in addition to anadic predicates or single-word sentences comprises predicates of any adicity, with argument places for variables ranging over the domain of *objects* ( $x^o, x_1^o, x_2^o$ , etc.,  $y^o, y_1^o, y_2^o$ , etc.,  $z^o, z_1^o, z_2^o$ , etc.).

A mapping  $\mu$  associates to each  $L^F$ -predicate a set of  $L^O$ -predicates of non-zero adicity. Indeed, some features, e.g. those corresponding to homogeneous stuffs such as “coal,” may be associated to more than one predicate of objects, e.g. “lump of coal,” “grain of coal,” or “veins of coal,” since they may be subject to arbitrary (de-)compositions. Other features, in particular those that are tantamount to patterns of spatial and temporal distribution, may generally be associated with single predicates of objects only, since they may not undergo arbitrary fusions.

Given the mapping  $\mu$ , one can, for each pair of predicates  $\phi$  of  $L^F$  and  $\psi$  of  $L^O$ , such that  $\psi \in \mu(\phi)$ , propose an introduction/elimination rule, which has  $\phi$  as its single premiss and a full existential quantification of the open formula  $\psi(x_1^o, \dots, x_n^o)$  as its conclusion:

$$\mathbf{IE1} \quad [\psi \in \mu(\phi):] \quad \phi \vdash \exists x_1^o \dots \exists x_n^o \psi(x_1^o, \dots, x_n^o)$$

Those  $L^O$ -predicates, for which holds

$$\vdash \exists x_1^o \dots \exists x_n^o \psi(x_1^o, \dots, x_n^o)$$

are referred to as *satisfiable* predicates. There is a subset  $S$  of monadic predicates of  $L^O$  such that identity statements about objects presuppose that these objects jointly satisfy at least

one member of  $S$ : these predicates are called *sortals*.<sup>6</sup> I write “ $\psi^{+s}$ ” for “is a sortal” and “ $\psi^{-s}$ ” for “is a non-sortal.”

Note that by no means the passage from a feature-placing language to an object-centered language sketched here is claimed to be cognitively plausible in any way. Far from presupposing that each speaker of English or any other natural language ever consciously goes through the stage of feature-placing, this step merely serves as a starting point for a *logical* construction.

### 3.2 Universals: kinds and characters

The language  $L^O$  can be extended to the language  $L^U$  by introducing individual variables ranging over *universals*, i.e. *kinds* (marked by the superscript “ $k$ ”) or *characters* (marked by the superscript “ $c, i$ ”), where  $i$  is a number indicating the adicity of the character):

- $X^k, Y^k, Z^k, X_1^k, Y_1^k, Z_1^k, X_2^k, Y_2^k, Z_2^k, \dots$
- $X^{c,i}, Y^{c,i}, Z^{c,i}, X_1^{c,i}, Y_1^{c,i}, Z_1^{c,i}, X_2^{c,i}, Y_2^{c,i}, Z_2^{c,i}, \dots$

Furthermore, I adopt a dyadic predicate “ $X^{k/c,i}; \psi^{+/-s}$ ” (reading: “ $X^{k/c,i}$  is the abstraction of  $\psi^{+/-s}$ ”), which holds between universal variables and *satisfiable* predicates of  $L^O$ , such that sortal predicates are always associated with kind variables and  $n$ -place non-sortal predicates always with character variables of (non-zero) adicity  $n$ . Thus one can stipulate introduction and elimination rules for existential claims about kinds and characters:

$$\mathbf{IE2} \quad \psi^{+s}(x^o) \vdash \exists X^k (X^k; \psi^{+s} \wedge x^o \iota X^k)$$

$$\mathbf{IE3} \quad \psi^{-s}(x_1^o, \dots, x_n^o) \vdash \exists X^{c,n} (X^{c,n}; \psi^{-s} \wedge x_1^o, \dots, x_n^o \in X^{c,n})$$

where “ $x^o \iota X^k$ ” means that the object  $x^o$  *instantiates* or is an *instance* of the kind  $X^k$ , and “ $x_1^o, \dots, x_n^o \in X^{c,n}$ ” means that the objects *exemplify* the ( $n$ -adic) character  $X^{c,n}$ .

### 3.3 Moments

The language of universals  $L^U$  can be expanded into the language of moments  $L^M$  by introducing variables ranging over moments of any (non-zero) adicity  $i$ , i.e.

$$x^{m,i}, y^{m,i}, z^{m,i}, x_1^{m,i}, y_1^{m,i}, z_1^{m,i}, x_2^{m,i}, y_2^{m,i}, z_2^{m,i}, \dots$$

and by adopting the introduction/elimination rule

$$\mathbf{IE4} \quad x_1^o, \dots, x_n^o \in X^{c,n} \vdash \exists x^{m,n} (x^{m,n} \tau X^{c,n} \wedge x^{m,n} \langle x_1^o, \dots, x_n^o \rangle)$$

where

1. “ $x^{m,n} \tau X^{c,n}$ ” means that the moment  $x^{m,n}$  is a token of the character  $X^{c,n}$ , and
2. “ $x^{m,n} \langle x_1^o, \dots, x_n^o \rangle$ ” means that the moment  $x^{m,n}$  inheres in the objects  $x_1^o, \dots, x_n^o$ .

It is commonly assumed that moments are not transferable from one object to another. In other words, no moment may inhere in more than one object or tuple of objects:

$$\mathbf{R1} \quad x^m \langle x_1^o, \dots, x_n^o \rangle, x^m \langle y_1^o, \dots, y_n^o \rangle \vdash x_1^o = y_1^o \wedge \dots \wedge x_n^o = y_n^o$$

In the process of introducing terms for entities of the various categories within the Aristotelian Ontological Square, we have also added predicates for instantiation, exemplification, inherence and tokenization. These predicates may aptly be called “transcendentals” inasmuch as they cross the categorial borders between kinds, characters, objects and moments. For this reason, it is only a matter of caution not to augment the Language of the Ontological Square with introduction rules that would allow the reification of those predicates, a choice which amounts to a form of nominalism about purported higher-order universals.

### 3.3 Grounding and the ontological priority of objects

Using the introduction and elimination rules stated above, a partial order of grounding relations between ontological categories can be defined and a class of entities can be identified as ontologically basic in the sense of being the least element in that partial order.

Now, the reader should be reminded that according to ontological deflationism all existence statements are equally deep or shallow. This means that an ontological deflationist cannot, on pain of incoherence, both maintain that items of certain categories exist *and* that they are “nothing over and above” whatever category of entities that may be considered ontologically basic. In ontological minimalism, as pretty much elsewhere, there ain’t such a thing as a free lunch. However, while “free lunch” double-talk is not permissible within ontological minimalism, the ontological commitment to entities of a basic category may be considered to be more fundamental than the ontological commitment to classes of entities that are higher up in the grounding hierarchy.

Let the notions of “immediate grounding” and “grounding” be defined as follows. A class of entities C1 immediately grounds a class of entities C2 if, and only if C1 appears in the introduction and elimination rule for C2. A class of entities

C1 grounds another class of entities C2 if, and only if there is a third class of entities C3 such that C1 grounds C3 and C3 immediately grounds C2.

By this definition, and in consideration of the succession of introduction and elimination rules described in the previous section, one can say that objects immediately ground kinds as well as characters, and thus also ground moments. Characters immediately ground moments, but neither kinds nor moments ground any other class of entities (cf. Fig. 2).

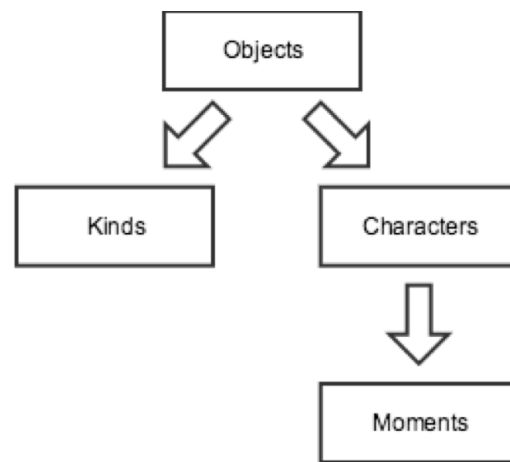


Fig. 2: Grounding between the elements of the Ontological Square

The fact that objects ground all other classes of entities within the Ontological Square represents a “victory of substantial particularity,” inasmuch as both universals and moments are grounded on objects. However, the present view also supports realism in the sense that the introduction rules ensure the existence of all classes of entities that belong to the Ontological Square. So the present approach emphasizes the primacy of objects without denying the existence of kinds, characters and moments, which is certainly Aristotelian in spirit if not in letter.

## 4. TAKING TIME SERIOUSLY WITHIN THE ONTOLOGICAL SQUARE

### 4.1 Times as substantial universals

According to Strawson (1959, p. 38f), objects, more specifically material bodies, are also ontologically prior to other particulars in terms of particular-identification. The members of a category *A* are (generically) ontologically prior to those of a category *B* if, and only if the *Bs* are *identifiability-dependent* on the *As*, i.e. if, and only if the *Bs* can only be identified provided the *As* have already been singled out (Strawson 1959, p. 17). Objects, being three-dimensional particulars with some endurance through time, are identifiability-independent because they alone are suitable for being nodes within a single spatiotemporal framework of reference on which particular-identification ultimately rests (Strawson 1959, p. 39).

However, someone could object to this thesis on the ground that objects are not fine-grained enough in terms of their duration in order to constitute sufficiently many temporal reference points within a spatiotemporal framework of reference. This may be one of the main reasons why Barry, following Moravcsik (1976), has adopted the view that the Aristotelian Ontological Square must be completed by adding two categories, namely processes and processual universals (see Smith 2005). Nonetheless, I maintain that since objects gradually come into and go out of being while their durations overlap, there should be enough of classes of contemporaneous objects to stand in for times. Let us assume that these classes are a special subcategory of kinds: these kinds could be regarded as the bearers of temporal relations. In other words, I propose to regard times as a special sort of substantial universals. So, substances are ontologically prior in terms of particular-identification after all, if among substances one includes universal substances, i.e. kinds, as well as particular substances, i.e. objects.

Objects are in time inasmuch as they instantiate times; since they *endure* in time, they may instantiate more than one time. But objects are not the only temporal entities. Indeed, in order to account for accidental change, one may assume moments, including the spatial locations of objects, to be temporally located, too. Thus, an object's having incompatible properties at different times amounts to moments with different temporal locations inhering in the very same object. There are some significant differences between moments and objects with respect to being in time, though. On the one hand, temporal location of moments cannot not

be analyzed in terms of instantiation as in the case of objects. On the other hand, it is arguable that, contrary to objects, moments may be instantaneous, i.e. temporally unilocalized.

### 4.2 Elements of a basic theory of time

Assuming that times can be associated with universal substances or kinds, our task is to find introduction and elimination rules for existence claims specifically about times, kinds having already been introduced at an earlier stage of the construction of the Language of the Ontological Square.

In a Priorian fashion, we may assume that ordinary modal idioms are primitive and that modal statements constitute the entry ticket for commitments to times (cf. Prior 1959/1976). Let us assume a simple, if not simplistic modal language for temporal reasoning, namely  $K4_t$ : The modal operators *F* ("sometimes in the future") and *P* ("sometimes in the past") are assumed to be primitive, while the operators *G* ("it is always going to be the case that") and *H* ("it has always been the case that") are defined in a straightforward manner:

$$D1 \quad G\phi \equiv \sim F \sim \phi$$

$$D2 \quad H\phi \equiv \sim P \sim \phi$$

Assuming that each syntactically independent or top-level sentence is to be evaluated at the present time, we can formulate two introduction and elimination rules, one for future times and another for past times, a commitment to the present time being concurrent in both rules. So the sentence "sometimes in the future it will be the case that  $\phi$ " is the antecedent for the statement that there is at least one time *T* that is preceded by the present time such that  $\phi$  holds at *T*.<sup>7</sup>

$$IE6a \quad F\phi \dashv\vdash \exists T (T^@ < T \wedge [\phi]^T)$$

Correspondingly, the sentence "sometimes in the past it is the case that  $\phi$ " is the antecedent for the statement that there is at least one time *T* that precedes the present time such that  $\phi$  holds at *T*.

$$IE6b \quad P\phi \dashv\vdash \exists T (T^@ < T \wedge [\phi]^T)$$

In order to guarantee that all theorems of  $K4_t$  turn out to be true, the relation of temporal precedence has to be transitive at least.

$$R2 \quad T < T', T' < T'' \vdash T < T''$$

The definition of the expression “ $\phi$  holds at  $T$ ” ( $[\phi]^T$ ) is obvious for molecular statements; I focus on atomic statements. Now, I suppose, but will not argue for the stance that instantiation of kinds by objects and tokenization of characters by moments are temporally invariant, that is, an object is an instance of its kinds *simpliciter* or *atemporally* and a moment is a case or token of its characters *simpliciter* or *atemporally*.<sup>8</sup> This invariance is ensured by stipulating that “ $[x^o \iota X^k]^T$ ” is equivalent to “ $x^o \iota X^k$ ” and “ $[x^{m,n} \tau X^{c,n}]^T$ ” is equivalent to “ $x^{m,n} \tau X^{c,n}$ .” Therefore, the only atomic statements affected by tense are exemplification claims and inheritance claims.

Thus, the statement that a moment inheres in a (sequence of) object(s) *at a certain time* is tantamount to the statement that the moment inheres in this sequence/object *and* that it is located at or a case of that time.

$$D3 \quad [x^{m,n} \langle x_1^o \dots x_n^o \rangle^T] \equiv x^{m,n} \langle x_1^o \dots x_n^o \rangle \wedge x^{m,n} \lambda T$$

The statement that a character is exemplified by a (sequence of) object(s) *at a certain time* is tantamount to the statement that the character has a case or token that inheres in this sequence/object at that time.

$$D4 \quad [x_1^o \dots x_n^o \in X^{c,n}]^T \equiv \exists x^m (x^{m,n} \tau X^{c,n} \wedge [x^{m,n} \langle x_1^o \dots x_n^o \rangle^T])$$

#### 4.3 Fragmentalism and the ineffability of the passage of time

*Presentism* is the combination of two views:

1. the ordinary tense idioms are primitive;
2. only present entities exist.<sup>9</sup>

As far as (2) is concerned, both descriptivism and ontological minimalism do not seem to be very accommodating. On the one hand, the transcendental account of the conditions of possibility for particular-identification posits past and future entities within a four-dimensional framework of reference. On the other hand, within ontological minimalism, any reduction turns out to be a straightforward introduction of the reduced entities into discourse, not their elimination from it. This means that in a deflationist context, any attempt to eliminate references to past and future entities by reducing them to references to presently existing things actually ends up providing grounds for existence statements about non-present entities, these grounds being exactly those statements that are supposed to provide the analyses of existence claims about past and future things.

The situation is slightly different with respect to (1). I have shown above how in a minimalist descriptivist setting modal idioms may be used as entry tickets or grounds for existence claims about times.<sup>10</sup> What is more, the existence statements that are introduced into the language already contain one ultimately irreducible modal idiom, namely that of the uniquely designating expression of “the present moment.”

If the flow of time is real, it is obvious that the reference of “the present time” is by no means rigid. This implies that the extensions of the predicates “past time” and “future time” are not rigid, either. Now, while Aristotelian Four-Category Ontology is incomplete without these notions, it seems to be under the threat of incoherence if it contains them: as time flees, what is future becomes present and what is present becomes past. The only way to preserve coherence is to distinguish between an untensed (or eternalist) and thus incomplete trunk ontology and an infinite sequence of tensed (or presentist) ontologies into which the former is successively instantiated and which only differ in the reference of the notion of “the present time” and the extension of the predicates “past time” and “future time.” The view that taking the passage of time seriously enforces a fragmentation of ontology and the abandonment of the idea of the unity of reality has been christened “fragmentalism” by Fine (2005, pp. 281–284),<sup>11</sup> but has been anticipated by Barry (see Grenon and Smith 2004) under the name of SNAP.<sup>12</sup>

Now, the passage of time enforces fragmentalism, but strictly speaking is invisible in each single presentist ontology. *Pace* Smith (ibid.), *a fortiori* this gap cannot be closed by adjoining an ontology of processes (which he calls SPAN) since this ontology is untensed. Hence neither a presentist ontology nor the eternalist trunk ontology can represent the passage of time: in this sense it is ineffable. Instead it shows itself in the succession of presentist ontologies: the flow of time is not ontological, nor meta-ontological, but literally dia-ontological.

What holds for the passage of time is even more so true for (human) action or activity (in the sense of *energeia*) as contrasted with the act (in the sense of *ergon*) that is its result. The diaontological character of action could be at the root of the puzzling problem of free will: the escape route between the Scylla of determinism and the Charybdis of indeterminism may be neither within, nor above, but in between ontologies.

## CONCLUSION

To sum up, then, I basically agree with Barry on two views:

1. Aristotelian ontology remains a viable option both in philosophy and in applied ontology.
2. The nature of time, namely that time *passes*, suggests that there is no overall unitary account of temporal reality, but that its description is fragmented into a succession of infinitely many presentist ontologies.

Nonetheless, I disagree with him on four issues:

1. The commitment to a methodology that emphasises the role of conceptual analysis does not conflict with the fundamental assumption of realism.
2. The Aristotelian Ontological Square can be defended as a categorial framework of descriptive metaphysics using a minimalist methodology.
3. The Aristotelian Ontological Square as a Four Category Ontology is complete insofar as it:
  - a) accounts for the varieties of ordinary language attribution,
  - b) can be validated in a formally rigorous manner, by showing how, starting from a feature-placing language as a fictional “degree zero” of ontology, a series of languages can be constructed, each resulting from its predecessor by the addition of terms referring to or ranging over a new category of entities, as well as of introduction/elimination-rules for existence claims regarding members of this category.

Provided the reality of the flow of time is granted, even the totality of presentist ontologies or views on reality is incomplete in the sense that it cannot capture the passage of time. But the ineffable shows itself precisely where, *pace* Smith, ontology fails.

Let me close on a personal note: at the beginning of this paper I have described Barry as a man of strongly held opinions. I may add that he defends this views in an uncompromising, sometimes formidable manner, especially if he fundamentally disagrees with his opponent(s)—in this respect he is only equaled or maybe even surpassed by Kevin

Mulligan, my other “Doktorvater.” However, I have to acknowledge his immense generosity and even tolerance for diverging views if their holder is capable of standing his or her ground. In this respect I sincerely recognize my personal debt to Barry, since without his support and opposition, I would not be the philosopher I am, however minor this status may be.

## NOTES

- 1 My only minute claim to fame in the applied ontology community is the fact that I am the last-mentioned co-author of the famous (2002) paper “Sweetening ontologies with DOLCE.”
- 2 So called because of its iconographic representation which can already be found in Carolingian manuscripts of Boethius’ commentary on Aristotle’s *Categories*; cf. Dufour 2014.
- 3 At least according to Porphyry’s Commentary (Busse 1887, pp. 22–79); cf. also Evangelidou 1996, pp. 51–53.
- 4 In applied ontology, this view has been defended e.g. by Gary Merrill (2010).
- 5 By calling the nexus between the terms a “non-relational tie,” one wishes to convey that it should not be reified as a relational universal.
- 6 In a sense I turn Wiggins’ principle of sortal dependence (cf. his 2001, p. 56) upside down in order to single out the class of sortals.
- 7 For variables over times, I shall ignore the complication of category superscripts.
- 8 I shall ignore the complication of so-called “phase-sortals”.
- 9 These views are classically put forward in Prior’s works (cf. Fine 2005, p. 133).
- 10 Note, however, that while this may be a reduction, it is not, by the very nature of the deflationist approach, an elimination.
- 11 It should be pointed out that I beg to differ with Fine concerning the ontological commitment to times.
- 12 It may be an irony that I have ended up admitting a position with which I used to differ viscerally while staying in Leipzig at Barry Smith’s IFOMIS.

## REFERENCES

- Ackrill, J. L. (Ed.) (1963). *Aristotle's categories and De Interpretatione*. Oxford: Oxford University Press.
- Angelelli, I. (1967). *Studies on Gottlob Frege and traditional philosophy*. Dordrecht: D. Reidel Publishing Company.
- Angelelli, I. (1991). Accidents III: The ontological square. In: H. Burkhardt and B. Smith (Eds.) *Handbook of metaphysics and ontology*. Munich: Philosophia Verlag, pp. 12–13.
- Arp, R., Smith, B., and Spear, A. (2015). *Building ontologies with Basic Formal Ontology*. Cambridge, MA: MIT Press.
- Austin, J. L. (1979). A plea for excuses. In: *Philosophical Papers*. Oxford: Oxford University Press, pp. 175–204.
- Busse, A. (Ed.) (1887). *Porphyrii Isagoge et in Aristotelis Categorias commentarium (Commentaria in Aristotelem Graeca Vol. IV)*. Berlin: Georg Reimer.
- Carnap, R. (1956). Empiricism, semantics, and ontology. In: *Meaning and necessity: A study in semantics and modal logic*. Chicago: University of Chicago Press.
- Dufour, A. (2014). El cuadrado ontológico: teoría e iconografía (with an introductory note by Ignacio Angelelli). *Anuario Filosófico*, 47: pp. 298–312.
- Evangelio, C. (1996). *Aristotle's Categories and Prophyry (Philosophia Antiqua 48)*. Leiden: Brill.
- Evnine, S. (2016). Much ado about something-from-nothing: Problems for ontological minimalism. In: S. Blatti and S. Lapointe (Eds.) *Ontology after Carnap*. Oxford: Oxford University Press, pp. 145–164.
- Fine, K. (2005) *Modality and tense*. Oxford: Oxford University Press.
- Gangemi A., Guarino, N., Masolo, C., Oltramari, A., and Schneider, L. (2002). Sweetening ontologies with DOLCE. In: A. Gómez-Pérez and V.R. Benjamins (Eds.) *Knowledge engineering and knowledge management, ontologies and the semantic web: Lecture Notes on Computer Science Vol. 2473*. Berlin/Heidelberg: Springer, pp. 166–181.
- Grenon, P. and Smith, B. (2004) SNAP and SPAN: Towards a dynamic spatial ontology. *Spatial Cognition and Computation*, 4: pp. 69–103.
- Hacker, P. M. S. (2010). *Human nature: The categorial framework*. Oxford: Wiley-Blackwell.
- Horwich, P. (1998). *Truth*. Second edition. Oxford: Clarendon Press.
- Lowe, E. J. (2006). *The four category ontology*. Oxford: Oxford University Press.
- MacMahon, W. E. (1977). Strawson and the Aristotelian ontological square. *Studies in Language*, 1: 363–378.
- Merrill, G. H. (2011). Ontology, ontologies, and science. *Topoi*, 30: 71–83.
- Moravcsik, J. M. E. (1976). Strawson on predication. *Journal of Philosophy*, 73: 329–348.
- Prior, A. N. (1959). Thank goodness that's over. *Philosophy*, 34: 12–17. In (1976) *Papers in logic and ethics*, London: Duckworth, pp. 78–84.
- Thomasson, A. (2015). *Ontology made easy*. Oxford: Oxford University Press.
- Schneider, L. (2009). The Logic of the Ontological Square. *Studia Logica*, 91: 25–51.
- Schneider, L. (2010). Revisiting the Ontological Square. In: A. Galton and R. Mizoguchi (Eds.) *Proceedings of the 2010 conference on Formal Ontology in Information Systems (FOIS 2010)*. Amsterdam: IOS Press, pp. 73–86.
- Smart, J. J. C. (1995). A Form of Metaphysical Realism. *Philosophical Quarterly*, 45: 301–315 .
- Smith, B. (1982). *Parts and Moments. Studies in Logic and Formal Ontology*. Munich, Vienna: Philosophia.
- Smith, B. (1997). On substances, accidents and universals: In defence of a constituent ontology. *Philosophical Papers*, 26: 105–127.
- Smith, B. (2005). Against Fantology. In: J. Marek and E. M. Reicher (Eds.) *Experience and Analysis*. Vienna: öbv&hbt, pp. 153–170.
- Smith, B. and Ceusters, W. (2010). Ontological realism: A methodology for coordinated evolution of scientific ontologies. *Applied Ontology*, 5: 139–188.
- Strawson, P. F. (1959). *Individuals: An essay in descriptive metaphysics*. London: Routledge.
- Strawson, P. F. (1992). *Analysis and Metaphysics*. Oxford: Oxford University Press.
- Wiggins, D. (2001). *Substance and sameness renewed*. Cambridge: Cambridge University Press.

---

# Barry Smith and His Influence On (Not Only, But Mainly My) Philosophy

PETER SIMONS

Trinity College Dublin  
College Green  
Dublin 2  
Ireland

Email: [psimons@tcd.ie](mailto:psimons@tcd.ie)  
Web: <http://people.tcd.ie/Profile?Username=psimons>

**Keywords:** Barry Smith, Wolfe Mays, ontology, Ingarden, Reinach, Daubert, Truth Makers

---

## EARLY YEARS

I first met Barry when he came to Manchester in 1973 as a postgraduate student to study for a PhD with Wolfe Mays, having completed his undergraduate studies in Philosophy and Mathematics at Oxford. I had then been studying philosophy for just two years, having transferred into the subject as a postgrad after getting my own BSc in Mathematics at Manchester. Wolfe was also my supervisor, more by default than choice, because I had started out being interested in existential philosophy, and he was the go-to person in Manchester for that. Barry had enjoyed the benefit of an Oxford undergraduate education: the most impressive of his teachers, he said, was Michael Dummett, whose first big Frege book was just out. I was a tyro by comparison. Wolfe was Barry's deliberate choice as supervisor, because he was interested in Husserl and phenomenology, which was off the Oxford radar, and Wolfe as founder-editor of the *Journal for the British Society for Phenomenology* was Mr. Phenomenology in Britain at that time.

From the start, it was obvious that Barry was possessed of two characteristics that have stayed with him ever since and marked his career: a strong passion for the things that interested him, including of course but not confined to philosophy, and an amazing capacity for sustained hard work at those things, which left the rest of us bobbing in his wake. When I say that neither I nor the third partner in our discussions and enterprises, Kevin Mulligan, is particularly slow or sparse in our production, this may give some idea of his

enviable fecundity as a writer, and latterly, as an ontological entrepreneur.

Barry is a native of Bury in Lancashire, a few miles north of Manchester, and on several occasions my wife Susan and I visited him in his house there. What I recall most vividly is the extent to which the house was dedicated to the storage of vast numbers of books. Bookshelves lined everywhere in the main room except doors and windows. When food or a bottle of wine was to be produced, books were moved and the required article brought out from behind them. We soon discovered our political differences: Barry was a Thatcherite, Susan and I were what he called 'Guardian social democrats'—*The Guardian* (formerly *Manchester Guardian*) being then, as it has remained, a left-leaning quality daily. This discrepancy remains. Avoiding hard-left, hard-right, (and now hard-Brexit) views, I wobble around somewhere in what one might call, in analogy with chocolate, the Soft Center. We have long agreed to disagree about politics.

Barry's energy exhibited itself not only in his cycling from Bury to Manchester, but also in his annual estival philosophical pilgrimages about the continent of Europe. From these meetings he returned to Manchester with ideas and links from a range of places, most notably Germany, Austria, Switzerland and Poland. In Kraków he met the philosopher-cardinal-archbishop Karol Wojtyła, whom I recall him describing as "probably some sort of saint." This was before the latter was elected to the papacy. When Wojtyła's philosophy writings started to appear, we all decided he was a better pope than a philosopher; religious phenomenology was not for us. However, *realistic* phenomenology was. It was



Barry who evangelized in our circle for Roman Ingarden, one of Husserl's most talented students, and the one who most vigorously opposed the latter's lapse into transcendental idealism. Barry also admired and praised Adolf Reinach, the leader of the Munich and Göttingen realist phenomenologists, and, together with Kevin and also the late Karl Schuhmann, exerted considerable effort to get Reinach's work edited, documented and more widely known. Together with Karl he also publicized the work of the real instigator of the phenomenological movement as a movement, the brilliant but dysfunctionally perfectionist Johannes Daubert. Through their tireless editorial work, much of it channeled through Munich's Philosophia Verlag, many of the less well-known figures of realist phenomenology have been made more accessible, especially to the English-speaking philosophical world, and the same goes for other central European realists such as Anton Marty, Brentano's most faithful student, and Christian von Ehrenfels, the father of Gestalt psychology.

The most important connections Barry made in central Europe, at least for me, were in Austria. In Graz he met Rudolf Haller, whose conviction that philosophy in Austria had taken a different (and generally better) line of development than in Germany (especially the former Prussian part—Bavaria was less affected by Kant and post-Kantian philosophy) was championed before Haller by Otto Neurath and after him by Barry. Kevin had independently arrived at a similar opinion, and I was readily persuaded. The other important Austrian connection was Edgar Morscher in Salzburg, of whom more is below.

Wolfe's weekly seminars, which had always been fairly free-wheeling affairs, were turned by Barry, Kevin and myself into exercises in presentation and discussion on a wide range of topics, with no holds barred, and the three of us rather dominated proceedings. We were extremely direct and often rude in our criticisms of one another, which no doubt helped us to acquire thicker skins for the times ahead, to lend our discussions a direct style which has become moderately well-known in our circles, but also to align our views more closely. Even more than forty years later, we are able to predict one another's views on more or less any philosophical topic, because they are nearly congruent and the few differences obvious.

## MOVING INTO CAREERS

Barry's PhD on reference in Frege and Husserl was a *tour de force* in bringing together these then rather disjunctively compared philosopher–mathematicians, and it brimmed over with interesting side-topics on such figures as Reinach, Ingarden, Schröder and Wittgenstein. It placed ontology solidly in the center of philosophy, and pulled me over from the philosophy of language into ontology. After my doctorate I was working in the university library in Manchester, while Barry got a research fellowship in Sheffield. I then got a lecturing job in Bolton, which involved much teaching with little time for research. By the later 1970s, the three of us were keen to keep our philosophical seminars going, so with the support of Barry's *padrone* in Sheffield, Peter Nidditch, we set up an informal grouping we called the Seminar for Austro-German Philosophy, which from March 1977 for several years held themed meetings around the UK, and occasionally abroad. The meetings were sparsely funded and depended mainly on enthusiasm from the participants. Many of the more senior figures Barry had encountered on his peregrinations were rounded up as Honorary Presidents. The people we had as speakers included not just established figures, who seemed pleased to participate, but also other younger upwardly mobile philosophers, and many a lifelong friendship resulted. The doctrinal line of the SAGP was that scientific philosophy in the 19<sup>th</sup> and 20<sup>th</sup> centuries did not coincide with analytic philosophy, important though that was, but included strands from Austria, Germany, Poland, Czechoslovakia and occasionally elsewhere. By and large, that message has become available in print, although its reception remains patchy; this is especially true among analytic philosophers, whose knowledge of central European thought is often confined to Wittgenstein, himself standard by no measure.

When Wolfe Mays retired as Reader in Manchester, Barry and I both applied for his position, and Barry got it. At the time I was put out, because Manchester was my home and I liked the eclectic mix of philosophies in the department. There was soon however a side-effect of the appointment which proved very advantageous for me. One of Barry's Austrian acquaintances, Edgar Morscher, had just been appointed in 1979 as Full Professor (*Ordinarius*), which in the Austrian system brought two assistant positions with it. Edgar had Barry in mind for one, but Barry had just accepted Manchester and felt unable to let them down. Edgar turned at Barry's suggestion to me: we had met in Manchester and Sheffield the previous year and had got on well. After tack-

ing a visit to Salzburg onto the end of a summer trip to Italy (staying with Kevin and his wife) and Kirchberg-am-Wechsel (my first Wittgenstein Symposium—the fourth—Barry had been in on the second), I decided I'd like to try working in Austria and managed to persuade Susan to give up her work and come too. It was a huge change—and as it turned out, for my own work and career, massively advantageous. I learnt German, and got to know a whole new and partly alien set of institutions and practices, as well as enjoying the cultural and natural wonders of Salzburg city and its surroundings. Despite knowing about Austria and Austrian philosophy at arm's length, I found the cultural shift involved challenging, but mostly very positive. Edgar became not only my *Chef* but also a close friend, and the department was outward-looking and welcoming. Employment conditions for foreigners were then not good: I had no permanent post and a lower salary than natives—this was before Austria joined the EU. Over the years, we slowly settled in: our children were born there, acquired both languages and went to school, and we made great friends. Teaching duties were modest, research was strongly supported and encouraged, the philosophers there, especially Paul Weingartner, had good connections, and the attractions of the city ensured a regular stream of good visitors. The stability of Austria at a time when Britain was undergoing socio-economic upheaval was welcome, and the position of the city in the centre of Europe facilitated easy travel to many philosophical destinations. In time I got my *Habilitation* and became an Austrian citizen, returning to Britain only in 1995.

In the meantime, Barry, Kevin and I were co-operating at long range on several projects, including the large edited volume *Parts and Moments*, to which I contributed three essays on aspects of formal ontology on which I had been working since Manchester days. Kevin and Barry wrote a magnificent introductory essay, 'Pieces of a Theory', which is a marvel of historical acumen and philosophical wisdom, as are their later essays in *The Foundations of Gestalt Theory*. Following the 1982 Wittgenstein Symposium we three put together a joint paper, 'Truth-Makers', which was published in 1984 and helped to make that notion and the terminology (which we discovered had been invented independently by C. B. Martin) much more widely known and discussed. The term is new, but the notion is old: it is there in embryo in Aristotle (like so much else), is commonplace in medieval philosophy under the terminology of a proposition's being *verified* for such and such items. Our immediate inspiration came from Husserl and Russell. (That one should be able without blushes to mention both in a conjunctive noun-phrase is part of

the ideology of the SAGP.) Nowadays, instant telecommunication and exchange of drafts by e-mail is taken for granted, but in those days it involved three-way postal exchanges, which took much longer. Since that time, while Kevin and Barry co-authored several papers, I have only been involved in one other triauthorial piece, our short 2006 'What's Wrong with Contemporary Philosophy?', whose strongly critical tone we would all not only maintain but amplify in the light of later developments. In regard to what one might call Bad Philosophy, Barry and Kevin hold strongly evangelical views, and they have studied specimens of it under the title 'nosology'. My own practice has been less interventionist: when I encounter Bad Philosophy I tend to ignore it and get on with something else. Their practice is preferable, since it often helps to be told and shown why some things are bad, but I do support them from the sidelines. We all three signed the famous letter to *The Times*—drafted first by Barry—deploring Cambridge University's decision to award an honorary doctorate to Jacques Derrida, and I still consider that opposition was right and justified. It helped the cause (but not the outcome) that we got famous names such as Quine, Armstrong, Marcus, Haller and Bocheński on board, all of whom have since sadly accompanied said Derrida into the *Jenseits*.

## PHILOSOPHICAL CONGRUENCE IN BIG THINGS

Many of the philosophical opinions that I hold most tenaciously derived from discussions with Barry and Kevin. Of these, perhaps the most important is our implacable opposition to any form of idealism, whether subjective, transcendental, or other. I was always inclined to realism, but being around philosophers of language can mysteriously undermine one's robust sense of reality, especially if one spends too much time trying to piece together what the latter Wittgenstein was driving at. Out and out idealists in the fashion of Berkeley are few (though I have known some), as are latter-day absolute idealists (I met one once), but responsibility for making a weaker, more insidious form of idealism acceptable, even normal, lies squarely with Kant, the philosopher who did more to ruin German-language philosophy than anyone before Heidegger, and whose influence will far outlast the latter. It is possible to write philosophy clearly, even beautifully, in German just as in other languages—Bolzano, Schopenhauer, Nietzsche, Frege and Reinach stand as examples—but Kant's enormous presence made it accept-

able to write in tortuous sentences with poorly explained or inconsistent terminology, leaving those readers (the majority) who flounder in their attempts to understand the Master vaguely worried that it's their fault for being insufficiently "deep" to appreciate the subtle points being made. That has led historically, as Barry has pointed out, to a plethora of commentary literature, which is far less prevalent in analytic than continental philosophy, with the notable exception again of Wittgenstein. While our early inspiration came from Ingarden and other realist phenomenologists, we later found agreement with such unabashed analytical realists as Herbert Hochberg and David Armstrong, and it was with great pleasure that we discovered the trenchant and witty dismissals of idealism by David Stove.

Barry and I do not quite see eye to eye on matters ontological—he is a realist about universals while I (like Kevin) am a nominalist; Barry is more of an Aristotelian, while I am more of a Whiteheadian—though we do all agree that it is incumbent on the ontologist, no matter how revisionary, to effect a meeting with the language and beliefs of the average person as well as the practicing scientist. This does not mean accepting or adopting common sense wholesale, but it does mean the onus is on the revisionist to provide positive reasons to think commonsense beliefs and ordinary ways of speaking are wrong or defective. An area in which Barry has made this stance very much his own trademark is his work on the application of formal ontology to database ontologies, to the extent that I frequently find myself calling BFO not "Basic Formal Ontology" but "Barry's Formal Ontology." The amount of common sense that he has instilled into IT ontologies and their practitioners is inestimable and admirable. The work of clearing up the messes created by earlier conceptualist or idealist approaches to such ontologies has been very much in the mold of philosophical nosology. It is no wonder that BFO and other realist frameworks for ontologies, based on solid realist philosophical foundations, are proving ever more popular.

Barry has consistently combined philosophical depth with a concern to reach out and interact constructively with experts in other disciplines such as geography and medicine, an attitude of which I heartily approve and that I have in a smaller way followed in relation to and collaboration with engineering. The idea of a philosopher anchored in an armchair, excogitating the structure of the universe *a priori*, is one which we both deride, and it would be otiose to need to mention that it has become obsolete since the scientific revolution, were it not that so many philosophers tenaciously hold on to that view or some variant of it, (wrongly) anx-

ious no doubt that their discipline would render itself redundant by merging into natural science. The concern to corral philosophy into a safe area beyond the reach of potential falsification or revision explains much of the appeal of transcendental idealism. To see that philosophers continue to have a negative, critical role, it suffices only to read some of the more puerile would-be philosophical statements of even great scientists. However, a more positive impression of the empirically answerable but non-capitulative systematizing and structuring role of good philosophy can be gained by examining the framework of formal ontology for scientific and everyday knowledge crafted by Barry Smith.

---

# The Liar, the Truth-Teller, and Barry Smith

WOJCIECH ŻEŁANIEC

Institute of Philosophy, Sociology and Journalism  
University of Gdańsk  
ul. Bażyńskiego 4  
80-952 Gdańsk  
Poland

Email: zelaniec@aol.com

Web: <http://www.wnswz.strony.ug.edu.pl>

**Keywords:** Barry Smith, ontology, Liar, Truth-Teller, truth makers, truth bearers, synthetic a priori

---

I think that one of the most valuable things that I learnt from Barry Smith, perhaps by a kind of osmosis, was a particular form of naivety. It is strange to say that one has learnt naivety, because we normally think that naivety stops where learning begins. But what I mean is a feeling of epistemological innocence in trusting one's common, or even not so common, sense and in taking whatever presents itself to one as a self-evident truth at face-value (while bearing in mind that this is just a fallibilistic self-evidence). I do not wish to suggest that this is a position of Barry's, but this is a position I worked out for myself on the basis of what Barry passed on to me: philosophers should be sometimes more naive than they are and are sometimes more naive than they should be. The challenge is to be naive at the right moment and place.

Here is an example, which I once again should like to stress is not to be regarded as Smithesque but which I would not have thought up (and still less thought out) had it not been for him. These two sentences: "This sentence is false" (the Liar) and "this sentence is true" (the Truth-Teller)<sup>1</sup> give rise to well-known difficulties. The Liar is, or at least appears, paradoxical: supposing it is true it comes out false and the other way 'round. The Truth-Teller is not obviously paradoxical, because no contradiction seems to follow from the hypothesis that it is true: If it is true, it is true, and if it is not, then it is not, and that is it. Yet, some philosophers have found the Truth-Teller paradoxical, too (see e.g. Woleński 1993; Billon 2014). I must say that I sincerely admire the ingenuity (and the non-ingenuousness) with which the philosophers who have taken either sentence seriously attempted to disarm or explain away the (alleged) paradox.

And ingenuity does not always mean complexity: Joseph W. Smith once formulated an astonishingly simple proof that the Truth-Teller was true (Smith 1984), which I, too, find convincing—except for the initial presupposition that "one is prepared to take the self-referential ascriptions of falsity [or truth] of a sentence such as the liar sentence [...] [or the Truth-Teller or their ilk] at all seriously" (p. 219). I am not prepared to do so and I can't imagine how I ever could. And the problem is that I, as distinct from Barry, am rather short-breathed when it comes to arguing from (what I consider) patently absurd premises, adopted just "for the sake of argument."

The problem, as I see it, is that both the Liar and the Truth-Teller are poor candidates to the title of genuine truth-bearers. Barry roused my interest in the issue of truth-makers (Mulligan, Simons and Smith 1984; Simon and Smith 2007) but starting from this I developed mine own for truth-bearers. Primary truth-bearers are, this is my position, not sentences as linguistic expressions but thoughts, some of which are sometimes expressed in linguistic expressions. Sentences as linguistic expressions have no intrinsic intentionality and for this reason they cannot be primary bearers of truth-values (although they may have a truth-value secondarily, as expressions of a thought). If you don't have any Thai, then "กฤษดาบแดง" or "kuhlāb dæng" is bound to remain inarticulate gibberish to you. Now as Kazimierz Ajdukiewicz, a Polish philosopher from the once famous Lemberg-Warsaw school, put it: A thought (*myśl*) is true if and only if it represents things as being thus and so, in the ontological domain in which the thought places them,<sup>2</sup> and things are thus

and so (Ajdukiewicz 1983, p. 39). Which thought does then the Truth-Teller (the easier case) express? Going by the linguistic meanings of its constituent expressions and its grammar, it expresses the thought that the thought it expresses represents the things (i.e. itself) as being the way they really are. For this to make (more than just linguistic) sense, or to express a thought, while thinking the thought that the Truth-Teller allegedly expresses you'd have to think about that very thought itself—which appears impossible—but, to boot, you'd have to think about it as representing things the way they are. But what way does the Truth-Teller represent things (i.e., itself) as being? Well, as representing things the way they are, and so forth. Our thought, in a desperate attempt to constitute itself, just can't go beyond this inchoative stage. This is what I here mean by “not expressing a thought.”

Let's compare the Truth-Teller with a sentence seemingly even more absurd than it: “The inhabitants of planet Tephlonia worship the good god Elvis” (an example coined by Barry). “This [i.e. the one just read] sentence is true, take my word for it.” All right, let's discuss it. For all its weirdness, the sentence does represent things as being thus and so, i.e. (and here we are transcending the assortment of words employed in the sentence itself<sup>3</sup>) as involving temples, rituals, processions dedicated to Elvis, bowings, genuflections, prostrations in front of Elvis' statues, or equivalent (in the widest possible sense) behaviour, or maybe Tephlonians' inward acts, sorts of *orationes iaculatoriae*, or perhaps studying some Elvisian holy books. I am not saying that the sentence in question can be verified by such findings, yet their contemplation gets us one step forward to establishing the sentence's truth-value; it is in the direction of such examples that we have to grope, trying to find out whether the sentence is true, and this will keep us busy for a long time. Should we find out that there is no Tephlonia, to start with, we would still vaguely know what would have had (not) to be the case on it if it had existed for the sentence to have a truth-value, and the sentence would have no truth-value yet express a thought all the same, even if a merely hypothetical one. In the case of the Truth-Teller, by contrast, we can find no such considerations, as there is in it, when it comes to representing things as being thus and so, no hint as to what that “thus and so” could be like. The Truth-Teller, aside from the challenge of thinking about the very thought one is now thinking, says only “things are as I am saying they are, that is, they are the way I am saying they are, that is, they are in the manner I am representing them as being, that is... ” This gets us absolutely no forr'arder.

As regards the Liar, a current challenge for the “gapper” like myself, i.e. one who thinks that the Liar (does not express a thought and for this reason) has no truth-value at all (Goldstein 2000; Żelaniec 2013) is presented in the form of the so-called Revenge Liar, which, in its most basic form, runs like this:

(1) (1) is not true.

Avenger: you say that (1) lacks truth-value; thus, you will admit that it is not true, won't you?

Me: There is a difference between “s is not true” in the sense “s is false” and “s is not true” in the sense “it is not the case that s is true (because s has no truth-value at all)”<sup>4</sup> but OK, I grant you the point and assert hereby: (1) is not true.

Avenger: So you also concede that “(1) is not true” is true?

Me: I do: “(1) is not true” is true.

Avenger: Now, “(1)” and “‘(1) is not true’ ” are two names of the same thing, namely (1), aren't they?

Me: Depends, but go on!

Avenger: Well, you said just now that “(1) is not true” was true, so substituting synonyms for synonyms you'd get “(1) is true,” thereby contradicting yourself. The Liar has been avenged!

Such mishaps accrue to those who are excessively fixated on expressions as material beings.<sup>5</sup> The expression “‘(1) is not true’ ” is, *qua* (a type of) material entity, the very same expression wherever it crops up, just as “*amor matris*” is the same expression regardless of whether it is used in the sense of “love for the mother” (an objective genitive) or in that of “love of the mother (for her child or children)” (a subjective genitive). But exactly like “*amor matris*”, “‘(1) is not true’ ” can be used in two different senses: once as another name of (1), another time as the name of a sentence expressing the thought that (1) (does not express a thought and for this reason) is not true (or false). The Avenger, urging that “(1)” and “‘(1) is not true’ ” are two names of the same thing, uses the latter expression in the first sense. I, by contrast, when I use “‘(1) is not true’ ” in the subject position in the sentence printed in italics above, use it in the second sense, that is, as a name of a sentence which is homographic with (1), but not identical with (1); the latter does not express a thought,

while the former expresses the thought that (1) does not express any.

Suppose, to make the above consideration clearer by means of an analogy, that “(1)” and “‘(1) is not true’” were two names of an object which quite obviously and indisputably was neither true nor false, for instance, a chair. Then, the reasoning just proposed by the Avenger would no less seem to go through. I should say: “(1) is not true” (meaning: the chair called “(1)” is not true), and pressed by the Avenger I should concede that that commits me to saying “‘(1) is not true’ is true,” and then the Avenger, using the fact that the expression “‘(1) is not true,’” which fills the subject position in the sentence I have just asserted, is also a name of the chair, would exclaim: Ah, so you are admitting that (1) is true after all! But this is wrong, because while saying “‘(1) is not true’ is true” I was not speaking of the chair (I was not using a name of the chair as the subject expression in the sentence that I asserted) but of a sentence (which was such that, unfortunately and misleadingly, its standard name is homographic with one of the chair’s names) expressing the thought that the chair was not true. The expression I employed was a kind of shorthand for: “The sentence ‘the chair called “(1)” is not true’ is true” so that the step to “(1) is true” by dint of the homography of names is not possible, simply because there are no homographic names here.

Similarly, in our case, in saying “‘(1) is not true’ is true” (the sentence printed in italics above) I am really saying just “The sentence ‘the inscription called by the Avenger “(1)” is not true’ is true” so that no homography is produced and no contradiction follows.

Much of contemporary philosophy, due to its prevalent naive materialism, has no conceptual slot available for the concept of different, but yet perfectly homographic sentences (unless by endowing their constituent words with different meanings or by exploiting a syntactic ambiguity), without which the above reasoning makes little sense. Again, I do not want to suggest that Barry would have accepted the above reasoning or its conclusions, although I hope that he would, nor do I intend to gauge the extent to which he accepts or rejects the premises of contemporary materialism (in semantics and philosophy of mind). I remember, however, from th’olden days when I knew him, that he would wage war on all philosophical schools which he suspected, rightly or wrongly, of empty verbalism and rhetorical seductiveness. Now the above considerations on the Liar and its ilk are not meant, at least not by myself, to remain an exercise in academic shadow-boxing, but they are meant as serious work towards finding tools and means of testing all kinds of dis-

course for having or not much content in terms of assertible thoughts. As Barry made me see, by the above-mentioned wars he waged, in the time I worked for him, there is deplorably much discourse—in politics, advertisement, morals, economics, and other social sciences, “life-styles,” religion and much elsewhere, including, yes, philosophy—that is less than the Liar or the Truth-Teller obviously, but no less truly, thought-free, all the while being linguistically correct or even attractive, nice-sounding, spellbinding (though not exactly the way in which Keats has been said to have been a spellbinder<sup>6</sup>). One of the most important social tasks, an enlightening task, of philosophy is to debunk this “fashionable nonsense,”<sup>7</sup> which, while not quite as evil as the Hobbesian Kingdom of Darkness, is no less demoralising and destructive. I am sure this was Barry’s position and Barry has accomplished very much with regard to that task, and it is to be hoped that he will still accomplish much more.

I owe also to Barry the lasting or at least long-time interest in various issues and philosophical areas, such as the early Göttingen phenomenology, especially Adolf Reinach; among the former I would mention, first of all, the issue of the synthetic a priori (in the Husserlian sense rather than in the original Kantian) to which I devoted a few publications (the latest one is Żelaniec 2013), one of them co-authored with Barry (Smith and Żelaniec 2012). The idea was that synthetic a priori judgments/sentences/propositions connect always two or more<sup>8</sup> non-logical concepts in such a way that it is enough to have an ever-so-fleeting familiarity with both of them to (believe to) see that the judgment in question is true. For instance (this is an example from Reinach): every promise gives rise to a claim and an obligation, mutually correlated. It would be protested, perhaps, that this proposition is purely analytic, yet a convincing proof that it is has not so far been forthcoming, and I have argued (Żelaniec 1992) that it would be harder to produce, should anyone take up this task seriously, than one would suppose.

Although I do not in the least wish to pretend that Barry was in any way responsible for it, yet I cannot help feeling that I in part under his influence grew weary of the tendency of some philosophers to let the matter rest at mere assertions that something can be done, and not to move on to actually doing the thing. A given judgment is analytic, for instance, that is (I am presupposing here the Fregean sense of “analytic”): it can be reduced to a tautology on the strength of the definitions of its constituent expressions; well then, let’s try to actually carry out the reduction, won’t you, let’s find the suitable definitions first, all the while making sure that they do not rely, for their correctness, on the judgment in ques-

tion itself. For while definitions cannot be true or false, yet they can be correct or not, in the sense of correctly rendering the common usage. If someone, then, suggests that it is part of the definition of a promise that a promise gives rise to a claim and an obligation, then let him tell us whether he thinks a normal English speaker, following common usage, would refuse to call a promise an act that happens to be exactly like a promise yet fails to give rise either to any claim or any obligation or both.<sup>9</sup> “The question is quite pointless, as there are no such acts”<sup>10</sup> is a likely answer. No sir, there are no such acts, because ... well ... because not only does every promise give rise to a claim and an obligation, mutually correlated,<sup>11</sup> but also the claim-and-obligation-generating property cannot be removed from the concept of a promise arbitrarily.<sup>12</sup> At least not in such a way as to make appear worth answering the question of an anticipated reaction of an English speaker to an instance of the concept so tampered with. Pressing such questions, and in general, insisting too much on the difference between “in principle feasible” and “actually done” does not gain you much popularity with most philosophers, but Barry did it with a special, and rare, unsurpassable charm.

In this or a similar fashion would I argue in favour of the somewhat old-fashioned category of the synthetic a priori. In line with Barry, I would call it a fallibilist conception of the a priori. That is to say, we should treat judgments synthetic a priori as very well-founded but still “only” hypotheses, and not forget that one day we might encounter facts or entities that plainly contradict them, however unbelievable this might sound to us at the present moment. Yet still, for the sentence “there is no colour that appears as intermediate between red and green as orange appears intermediate between yellow and red,” which looks like a good candidate for the title of “synthetic a priori,” empirical data interpretable as convincing counter-evidence seems to have been found (Crane and Piantanida 1983). It would be tempting to compare this theoretical fallibilism with Barry’s personal one, and as a person Barry (as I knew him) was not always very easy to convince that any of his favourite a priori beliefs might after all not fit the facts so well. “All the worse for the facts,” one seemed sometimes on the verge of hearing him say in the Hegelian (if such it really be) vein. But sometimes he was right to be stubborn. I remember a longish discussion with him on states of affairs (another topic of his in which he roused my interest), in which I argued, against Reinach championed by Barry (Smith 1987, p. 201f.) that not all languages knew the difference between a sentence (“the rose is red”) and a nominal group (“the red rose”); for instance

in Thai, both were “กุหลาบแดง” (“kuhlāb dæng” in Latin characters, literally: rose red). This is rather strange, because most languages do make this elementary distinction,<sup>13</sup> but Thai, hardly a “primitive dialect,” does not. “They certainly utter it with a different voice inflection, depending on whether they mean to say ‘the rose is red’ or ‘the red rose,’” Barry kept asserting intransigently, and I could scarcely suppress a certain internal chuckle at his hard-headedness. Much later I realised he might have been right, even if he was factually wrong as far as the Thai-speaking community is concerned: you can utter the same expression and express two different thoughts by it, or once express a thought and another time not express any. Much of my argumentation against the Truth Teller above depended on that possibility for its persuasiveness, if it had any.

With regard to languages and language as such, Barry is, in my memory, extraordinarily gifted and sensitive. He spoke very good German, so he could hold a lecture on a complex philosophical topic in that language freely, i.e. not by reading it off a script, and he could read in a few other languages. He also was eager to pick up various phrases and expressions in every language he came into contact with. He would play small practical jokes on people by throwing in bits like “yes, that’s true” in a conversation in a foreign language in that language, in his charming way, very much to the amusement of the interlocutors. I sometimes try to imitate him at the University of Gdańsk, where I teach and where there are many students from Spain, in that I, passing by a group of such students, quickly remark “*no, no es verdad lo que dice*” (no, it’s not true what s/he is saying), but not exactly with the Barryesque effects. Yet Barry was, first of all, extremely, but also to a large extent self-ironically, proud of his native idiom, and would often say “English is language par excellence,” whatever this was supposed to mean. When I teased him with John Skelton’s observation (16th century) that:

Our natural tongue is rude  
And hard to be ennewed [...]  
Our language is so rusty  
So cankered, and so full  
Of frowards, and so dull [...]  
I wot [know] not where to fynde  
Terms to serve my mynde

Barry responded with a variation on Pope:

Our language and its wealth lay hid in night;  
God said, “Let Shakespeare be!” and all was light.

One evening in the mid-nineties Barry “threw a party” (a favourite locution of his) at his home; in the middle of a conversation a non-Anglophone guest at the party said that he had never “shaked” hands with a Mr. So-and-So. In response, Barry said: “shook,” in a solemn, teacher-like tone of voice. A few minutes later Barry was telling his guests how skillful he was as a cook and asserted of a cake: “I baked it myself.” In this moment, I cut in and said in an equally solemn tone of voice: “book.”<sup>14</sup> That was my “revenge,” for which I did not fail to harvest amusement.

I sometimes teased Barry’s pride of his “natural tongue” beyond due measure—which he bore with apparently unshakeable stoicism—confronting him with various seemingly absurd properties of English. Here is an example. This may not be obvious to many or most Anglophone readers, but in most languages that are “par less-than-excellence” words are derivable from one another in a regular fashion. For instance, in Polish “*wilk*” means “wolf,” while “*wilczy*” means “lupine,” similarly “*kot*” – “*koci*” (“cat” – “feline”), and so on. In English, by contrast, the adjective is Latinate, while the substantive is Saxon, and they are not derived from one another, meaning apart. So I once collected a number of such pairs and asked Barry if it was linguistically correct to call the thesis defended by a Dr. Hare a “Leporine thesis,” or a playful invention by a Winola Cat a “Feline invention,” or the conjecture by a Prof. Ben Seal a “Phocine conjecture,” or the assertion by a Frederic Gander-Goose an “Anserine assertion,” or the explanation by a Jane Peacocke a “Pavonine explanation,” or the transgression perpetrated by a Herbert Elk an “Alcine transgression,” or the advance achieved by a Donald D. Duck an “Anatine advance,” or the theory formulated by a Dr. Grail Oxe a “Bovine theory” (and a number of others)—to which Barry responded with a note of stoic resignation: “I am very sorry but none of these would really work in English.” Fair enough.

Barry was, too, very good at coining humorous sayings that exploited various hidden meanings of familiar words. As he was regarded by many of his students and acquaintances (non-native speakers of English) as an authority on “language par excellence,” he was often asked various questions on that language. For instance, once he was asked whether, given that there were the verbs “to overwhelm” and “to underwhelm” (a recent coinage), there existed in English a verb like “to whelm.” His answer: “Certainly. I whelm myself every day just to the right extent, otherwise I’d be seriously underwhelmed.” I have no doubt that Barry keeps whelming himself just to the right extent, I hope, whatever that means.<sup>15</sup> Another example, this time of Barry’s liter-

ary wit, was his “Old Nordic Saying,” which I have passed on to many of my students: “To have history without ideas is blind; to have ideas without history is American” (Smith 1984, p. 311).

Another striking feature of Barry’s, noticed not just by me, was his being blessed with an intense emotional attachment to his mother-country England and to things English. As he once quoted a medieval work, perhaps *Confessio amantis* by John Gower (1330–1408), as (according to its author) “A bok for Engelondes sake,” it suddenly occurred to me that practically every work by Barry could be thus entitled. Only later, as I came to know him better, did I realise that Barry’s relation to England was not as unproblematic as all that (due to the class-ridden structure of the English society); yet most of the time, it is true, one had the impression of hearing the last stanza of Rudyard Kipling’s “Home return” in the background:

If England was what England seems,  
An’ not the England of our dreams,  
But only putty, brass, an’ paint,  
'Ow quick we’d chuck ‘er! But she ain’t!

and one felt like asking “but isn’t she really?” Well, this is a sore point, but the last time I talked to Barry about such issues I no longer had the impression that, in his eyes, she wasn’t. And yet, Barry would say “we” in some contexts, such as “we conquered India,” “we ruled half a world,” “we’ve become wimps since WWII” and similar. In imitation, I also took to saying “we” with reference to Poland (“we got partitioned between Germany and Russia in 1939”), for a stretch of time.

For some reason that escapes me now, I once gave Barry a computer file with the famous Nelsonian phrase “England expects that every man will do his duty” printed umpteen times over in different fonts; some time later, paying him a short visit at his place, I discovered that he had printed that out and attached it to the wall in front of his desk. Would he have done so if the text had read “*L’Angleterre est une nation de marchands*” or even “The more he looked inside, the more Piglet wasn’t there”? Hardly conceivable...

I also remember that Barry was sometimes, if very seldom, rather stern and tough on us non-native speakers of English with regard to certain words and locutions which he thought only English poets were authorised to employ. In my case the “sacrilege” consisted of using somewhere in writing the verb “to asseverate” with reference to philosophers who solemnly affirm, but little more than just affirm, that something can



be done or demonstrated. Years later, when I told the story to another British person the reaction was: “What a funny story about your boss! No right to use certain words? LOL!” LOL indeed but, yet, I am proud of having had a “boss” like that: English may or may not be “language par excellence,” but language is a very valuable tool, and those insufficiently competent should not be left meddling with language unattended. I do not know if Heidegger was right in calling man the herdsman of being, but Barry was and I am sure continues being a brilliant and skillful herdsman of Language (par excellence).

More personally, the Barry I know is a very generous, resourceful, efficiently helpful and (at the same time) modest man. Even when reporting his many brilliant successes, he would never be boastful, arrogant, or presumptuous. There is a consistent streak of self-irony, or perhaps of not taking himself too seriously, present in everything he ever says about himself or quoted as said about himself by somebody else. Last but not least, he has always been helpful to others in a practical sense, not just in the sense of giving moral support. He has always read and extensively commented on draft manuscripts (even those that were not really worth his time) by his students, assistants, and colleagues, providing them with oftentimes caustic (“learn how to use a word-processor”) but mostly very just remarks. He has also readily engaged in serious philosophical discussion even with persons who are by far not his match. Barry’s practical generosity has been also demonstrated in his very efficient and reliable replies to letters and emails. He responds almost immediately, and always very much to the point and constructively. For this reason, a colleague of mine called him once a “philosopher businessman” in good-willed banter. However, while efficiency and reliability certainly are important traits of good businessmen, Barry is *not*, as I know him, a businessman in a very important sense. That is, Barry has never tried, for aught I know, to “sell” to anybody ideas he did not himself believe in, only to personally profit from another person’s being persuaded by his truly formidable eloquence. There has always been something of a secular missionary (but not a peddler) about Barry, yet a missionary passionately believing in his cause<sup>16</sup> (whether Aristotelianism in philosophy or Free Market Liberalism in economics), and sincerely convinced its adoption is in everybody’s, not just his, best interest.

## NOTES

- 1 Sometimes called the “Veridic.” See (Żelaniec 2013).
- 2 This proviso by Roman Ingarden (Ingarden 1985, p. 143) is meant to help to deal with such truths as that Polyphemus was blinded by Ulysses.
- 3 An inability to paraphrase a sentence in quite different words is an almost sure sign that the sentence expresses no thought, at least to the speaker. See e.g. Plato’s *Gorgias*, where Calicles is unable to explain the crucial difference between “better” and “stronger” and his clumsy efforts are commented upon by Socrates thus: “Ὁρᾶς ἄρα ὅτι σὺ αὐτὸς ὀνόματα λέγεις, δηλοῖς δὲ οὐδέν;” (“So you see, you are uttering mere words yourself, and explaining nothing,” tr. by W.R.M. Lamb 489e). Or this passage from Hume on efforts to define causality: “Motion in one body is regarded upon impulse as the cause of motion in another. When we consider these objects [...], we find only that the one body approaches the other; and that the motion of it precedes that of the other, but without any sensible interval. [...] We can go no farther in considering this particular instance. [...] Shou’d any one leave this instance, and pretend to define a cause, by saying it is something productive of another, it is evident *he would say nothing*. For what does he mean by production? Can he give any definition of it, that will not be the same with that of causation? If he can; I desire it may be produced. If he cannot; he here runs in a circle, and gives a synonymous term instead of a definition.” (Treatise, bk. I, pt. III, sect. II). “To say and to say nothing” or “to provide synonyms instead of a [not merely verbal] definition” is, so I should understand it, to speak and yet express no thoughts.
- 4 The latter is sometimes called the wide-scope negation, see (Horn 2001, p. 226; Brandtler 2006, p. 183).
- 5 As Hume’s theologians were not, since they “clearly perceived, that the external form of words, being mere sound, require an intention to make them have any efficacy; and that this intention being once considered as a requisite circumstance, its absence must equally prevent the effect” (Treatise, bk. III, pt. II, sect. V). But they, presumably, were no materialists.
- 6 Cf. these surprisingly highly relevant remarks on style: “Does [the given] writer make me more keenly conscious [...] both of what he is saying and of the events and significance of my daily life? Do I see the world in clearer details after reading him? Or does he just give

me a drowsy feeling in which musical noises agreeably peal and reverberate? It is interesting to note that the older English writers never did merely this. Even great masters of the ornate style like Sir Thomas Browne and Jeremy Taylor have a hard core of meaning which keeps the reader constantly alert. It is only with the nineteenth century that the professional spellbinders appear: Coleridge, Keats, much of Shelley, Tennyson, Swinburne, Morris, Fletcher [...]” (Blackstone 1954, p. 270), a good description of what expressing a thought as distinct from merely spellbinding by “musical noises” can be like. For an interpretation of difficult thoughts contained in Euclid’s Elements see (Reed 1990).

- 7 Sokal and Bricmont 1998. This is as a rule less spellbinding and less musical.
- 8 In (Smith 1996) Barry mentions just the concept of being a part of . . . . The second one is the second-order concept of being transitive.
- 9 Just as he would deny the name of a brother to everyone who were someone’s sibling but not a male one.
- 10 There seem to be such acts, to be sure, such as e.g. “promises” given while intoxicated and the like, but as long as we consider them promises we normally think they do generate a claim and an obligation, and if we discover they are no promises after all, we do it not just by seeing that they have not generated a claim or an obligation.
- 11 Attention: while our original synthetic a priori judgment could have been understood as possibly vacuously true (i.e. if there had not been any promises) this last sentence must not be so understood: there are acts that look exactly like promises and . . . lo and behold, all of them generate claims and obligations. To make this clear it is apposite to formulate our original judgment as a conditional: “If as a matter of empirical fact an instance of the kind *promise* occurs, then there begin to exist enduring states of claim and obligation” (Smith 1987, p. 191).
- 12 By contrast, it is very much possible to separate the property of being male from the property of being a sibling, without changing anything about the latter.
- 13 For instance, in Russian “rose red” is the sentence, while “red rose” is the nominal group.
- 14 As a matter of fact, in German, a sister language of English, the old past tense “*buk*”, of “*backen*”, to bake, still survives, even if reputed old-fashioned.
- 15 As a matter of actual fact, “to whelm” once existed and meant “to overturn”, “to capsize” (of a vessel); “over-” in “overwhelm” is just an intensifier. The current meaning “overcome” is figurative.

- 16 I sometimes heard him quote the Hussite slogan “*Veritas praevalebit*” or “the truth will prevail” with reference to one of his causes.

## REFERENCES

- Ajdukiewicz, K. (1983). *Zagadnienia i Kierunki Filozofii. Teoria Poznania, Metafizyka*. Warszawa: Czytelnik.
- Blackstone, B. (1954). *A Manual of Advanced English for Foreign Students*. London/New York/Toronto: Longmans, Green and Co.
- Billon, A. (2013). The Truth-Tellers [sic] Paradox. *Logique et Analyse*, 56(224): 371–389.
- Brandtler, J. (2006). On Aristotle and Baldness: Topic, Reference, Presupposition of Existence, and Negation. *Working Papers in Scandinavian Syntax*, 77: pp. 177–204.
- Crane, H. D. and Piantanida, T. P. (1983). On Seeing Reddish Green and Yellowish Blue. *Science*, 221(4615): 1078–1080.
- Goldstein, L. (2000). A Unified Solution to Some Paradoxes. *Proceedings of the Aristotelian Society*, 100: 53–74.
- Horn, L. R. (2001). *A Natural History of Negation*. Stanford: CSLI.
- Ingarden, R. (1985). On So-Called Truth in Literature. In: P. J. McCormick (Ed.) *Selected Papers in Aesthetics*. Washington, D.C./München/Wien: Catholic University of America. Press/Philosophia Verlag, pp. 133–162.
- Mulligan, K., Simons, P. and Smith, B. (1984). Truth-Makers. *Philosophy and Phenomenological Research*, 44: 287–321.
- Reed, D. (1990). *Figures of Thought. Mathematics and Mathematical Texts*. London and New York: Routledge.
- Smith, B. (1984). Ten Conditions on a Theory of Speech Acts. *Theoretical Linguistics*, 11(3): 311–330.
- Smith, B. (1987). On the Cognition of States of Affairs. In: K. Mulligan (Ed.) *Speech Act and Sachverhalt: Reinach and the Foundations of Realist Phenomenology*. Dordrecht/Boston/Lancaster: Kluwer, pp. 189–225.
- Smith, B. (1996). In Defense of Extreme (Fallibilistic) Apriorism. *Journal of Libertarian Studies*, 12: 179–192.
- Smith, B. and Simon, J. (2007). Truthmaker Explanations. In: J. M. Monnoyer (Ed.) *Metaphysics and Truthmakers*. Frankfurt/Lancaster/ New Brunswik: Ontos, pp. 79–98.
- Smith, B. and Żelaniec, W. (2012). Laws of Essence or Constitutive Rules? Reinach vs. Searle on the Ontology of Social Entities. In: F. De Vecchi (Ed.) *Eidetica del Diritto e Ontologia Sociale: Il Realismo di Adolf Reinach/ Eidetics of Law and Social Ontology: Adolf Reinach, the Realist*. Milano-Udine: Mimesis, pp. 83–108.
- Smith, J. W. (1984). A Simple Solution to Mortensen and Priest’s Truth Teller Paradox. *Logique et Analyse*, 27(106): 217–220.
- Sokal, A. and Bricmont, J. (1998). *Fashionable Nonsense: Postmodern Intellectuals’ Abuse of Science*. New York: Picador.
- Woleński, J. (1993). Self-Reference and Rejection. *Filozofia Nauki*, (1): 89–102.
- Zelaniec, W. (1992). Fathers, Kings, and Promises: Husserl and Reinach on the A Priori. *Husserl Studies*, 9: 147–177.
- Zelaniec, W. (2013). Truth-Value and Self-Reference: Against the Spectre of the ‘Revenge Liar.’ In: S. Colloca (Ed.) *The Value of Truth/The Truth of Value*. Milano: Lettere Economia Diritto, pp. 59–89.
- Zelaniec, W. (2013). An Example of the “Synthetic A Priori:” On How It Helps Us to Widen Our Philosophical Horizons. *Semiotica*, 194: 63–76.

# Necessity and Truth Makers

JAN WOLEŃSKI

Instytut Filozofii  
Uniwersytetu Jagiellońskiego  
ul. Gołębia 24  
31-007 Kraków  
Poland

Email: [jan.wolenski@uj.edu.pl](mailto:jan.wolenski@uj.edu.pl)  
Web: <http://www.filozofia.uj.edu.pl/jan-wolenski>

**Keywords:** Barry Smith, logic, formal ontology, truth makers, semantic theory of truth, Polish analytic philosophy

I met Barry for the first time at the Ingarden Symposium held in Cracow in 1984. We both co-chaired the session in formal ontology. At the beginning, Barry said that formal ontology must be done in military order. He meant that everything must be done on time. However, I prefer to replace the term ‘military’ with the term ‘logical’ because I believe that formal ontology must be done according to logical order. It is not only possible but, I dare say, it is quite certain that Barry’s understanding of logic is different than mine. In light of this difference, I recognize that I have a challenging task ahead since I have chosen to address ‘truth makers’ here as my celebratory contribution for Barry’s *Festschrift*. I hope that he will be tolerant with respect to my formalist attitude, at least to some respect.

I rather follow a Polish imperative to understand logic in a restrictive sense, that is, formal in the traditional sense. Thus, I should add that my analysis in this paper follows the Polish analytic tradition. I know very well that Barry has always shown great respect for Polish analytic philosophy as a sound mode of philosophizing. But I also know that he would object to my identifying the philosophy in Poland as Polish analytic philosophy because, to him, good philosophy is not characterized by national idiosyncrasies. He used to say, “There is no such thing as Polish philosophy; it is just good philosophy.” His point was that to qualify analytic philosophy with the term ‘Polish’ renders the phrase ambiguous: it could refer to a particular national philosophy or to good philosophy done in Poland. If the latter, then there is no need to say anything other than ‘good philosophy.’

In genuine observance of logical order and good philosophical fashion, then, I shall start my examination with some clarifications. First of all, I do not belong to the advocates of the theory of truth-makers. More precisely, I favor the semantic theory of truth (see Woleński 2014) and Tarski’s truth-definition over defining the concept of truth via truth-makers. Eventually, truth-making may be used in explaining the criteria of truth, but I shall skip this here. Nonetheless, I will not argue against ‘truth-makerism’ as a general account of how the concept of truth should be defined. In other words, I am interested in internal problems of Truth-Maker Theory (hereinafter TMT). My only task here consists in analyzing the consequences of seeing truth-makers via the idea that they necessitate truth.

The view that truth-makers necessitate truth of sentences—e.g., statements, propositions, judgments, etc.—has many advocates in contemporary discussions (see Smith 1999; Armstrong 2004; Merricks 2007).<sup>1</sup> On the other hand, the idea of truth-making as a necessary nexus does not occur in the seminal paper (see Mulligan, Simons, and Smith 1984), which opened the present debate about truth-makers. A fundamental intuition in regard to the truth-making relation is captured by

(1) A truth-bearer is true if and only if it has a truth-maker.

In a formal language (see Rami 2009, p. 3), (1) as the truth-maker principle can be expressed by

- (2) For every  $A$ ,  $A$  is true if and only if there is a  $y$  such that  $y$  is a truth maker for  $A$ .  
In symbols:  $\forall A(\text{Tr}(A) \Leftrightarrow \exists y\text{TrMk}^A(y))$ .

Yet I consider (2) as less convenient for analysis than its conversion into something similar to the T-scheme, namely<sup>2</sup>

- (3) Every instance of the scheme  
(\*)  $\text{Tr}(A) \Leftrightarrow \exists y\text{TrMk}^A(y)$  is a theorem of **TMT** (truth-makers theory)

Now, the problem here is whether the necessity parameter must be introduced into (\*). The truth-maker necessarists—i.e., those who believe that truth-making is just necessary—reply “Yes” and propose various ways in order to justify this strong claim. I will examine this claim by using modal logic.

I would like to recognize at this juncture that, in the foregoing, I have entirely neglected to address the nature of truth-makers as well as the problem of whether (2) suffices for developing a full-blooded theory of truth-makers. I only assume that they are things of a sort without deciding whether they are mereological or set-theoretical entities, and without considering additional constraints such as the principle of projection proposed by Barry Smith (see Smith 1999). Furthermore, I assume that modal logic—in fact, very elementary principles of modality—can be applied to **TMT** independently of the ontological status of truth-makers. This assumption is commonly shared by many truth-maker theorists, including Barry Smith, who says (see Smith 1999, p. 277) that he uses modal logic “in the vicinity of S4.” All propositional functors, that is, negation, implication, etc., have the classical truth-functional interpretation.<sup>3</sup>

The simplest way to cope with the problem is to split (3) into

- (4) (a)  $\text{Tr}(A) \Rightarrow \exists y\text{TrMk}^A(y)$ .  
(b)  $\exists y\text{TrMk}^A(y) \Rightarrow \text{Tr}(A)$ .

Now (4a) states that  $\text{Tr}(A)$  is the sufficient condition for  $\exists y\text{TrMk}^A(y)$ —i.e., being true is sufficient for the existence of a truth-maker—but (4b) considers  $\exists y\text{TrMk}^A(y)$  as the necessary condition for  $\text{Tr}(A)$ . One could even say that (4b) nicely captures the significant sense in which truth-making just necessitates truth itself. However, we can easily see that this account appears as artificial and too poor for necessarianism.

Another possibility is to change the succession in (3) in order to obtain its equivalent, that is

- (5)  $\exists y\text{TrMk}^A(y) \Leftrightarrow \text{Tr}(A)$ .

Under this move,  $\text{Tr}(A)$  is necessary for  $\exists y\text{TrMk}^A(y)$ , but the latter is sufficient for the former. Clearly, (4) and (5) make the entire problem trivial because both  $\exists y\text{TrMk}^A(y)$  and  $\text{Tr}(A)$  mutually co-necessitate and co-suffice. It is not surprising that this situation is caused by (3). This constraint claims

- (6) **TMT**  $\vdash$  (or  $\vdash^{\text{TMT}}$ )  $\text{Tr}(A) \Leftrightarrow \exists y\text{TrMk}^A(y)$ , for any  $A$ .

This means that instances of (\*) are theorems. Assuming that we have sufficient deductive resources, for instance the  $\omega$ -rule, we can even say that the formula “ $A(\text{Tr}(A) \Leftrightarrow \exists y\text{TrMk}^A(y))$ ” is provable in **TMT**.

We can draw some lessons come from the foregoing elementary observations. The first is that necessary and sufficient conditions can be reversed. The explanation is as follows. If a given theory **Th** proves the formula  $A \Leftrightarrow B$  (in symbols,  $\text{Th} \vdash (A \Leftrightarrow B)$ ), the way of structuring necessary and sufficient conditions is conventional to some extent. Basically, proving the formula of the type  $A \Leftrightarrow B$  requires to demonstrate two implications, namely  $A \Rightarrow B$  (the sufficient condition) and  $B \Rightarrow A$  (the necessary condition).

Secondly, one might eventually say that (\*) is **TMT**-necessary or **TMT**-analytic. Staying with necessity as more relevant in the present context than is analyticity, we should examine which kind of necessity is involved in the discussed issue. Clearly, (\*) is not a tautology, similarly as **T**-scheme (see Woleński 2008). Hence, if we agree to speak about **TMT**-necessity, it is of a conditional character. In other words, **TMT**-necessity (and eventually, other modalities) are not logical. I will return to this below.

Thirdly, since according to the principles of propositional calculus, we can decompose (\*) into the disjunctive formula

- (\*\*)  $\text{Tr}(A) \wedge \exists y\text{TrMk}^A(y) \neg \text{Tr}(A) \wedge \exists y\text{TrMk}^A(y)$ ,

the following question arises: whether or not ‘being not-true’ and ‘being false’ are actually equivalent predicates.

The above considerations suggest that a weakening of (\*) to (4b) actually helps in analyzing at least some aspects of introducing necessity into the logico-philosophical business of truth-making. Thus, we should consider how embed the sign of necessity into the formula  $\exists y\text{TrMk}^A(y) \Rightarrow \text{Tr}(A)$ . I begin with a proposal of Trenton Merricks.<sup>4</sup> He writes:

*Necessitarianism* says that a truthmaker necessitates that which it makes true. That is, necessitarianism says that, for all  $x$  and all  $p$ ,  $x$  is a truthmaker for  $p$  only if  $x$ 's mere existence is metaphysically sufficient for  $p$ 's truth.

Let me try to formalize this definition. It can be done, by the formula (and I slightly change letters according to my notational conventions; the symbol **Nec** stands for 'necessitates').

$$(7) \forall y \forall A (\mathbf{Ex}(y) \wedge y \in \mathbf{TrMk}^A(y) \mathbf{Nec} \mathbf{Tr}(A)).$$

I take the word 'only' as indicating that the formula  $\Rightarrow$  should precede the expression  $\mathbf{Tr}(A)$ , I render 'mere existence' by ' $y$  exists' (I skip the problem of the status of this expression; one can consider it as a special predicate), and 'metaphysically sufficient' by ' $y$  belongs to truth-makers of  $A$ ' without entering into various questions concerning metaphysical grounding or dependence.

Merricks (2007) adds:

Understood as a necessary condition for *making true*, necessitarianism is now truthmaker orthodoxy. [...]. Let *conditional necessitarianism* be the denial of necessitarianism conjoined with the claim that for all  $x$  and  $p$ , if  $x$  is a truthmaker for  $p$ , then, necessarily, if both  $x$  and  $p$  exist, then  $p$  is true. [...]. Conditional necessitarianism is equivalent to the claim that if  $x$  is truthmaker for  $p$ , then it is impossible that  $x$  exists and  $p$  have a truth-value other than true (or lacks truth-value altogether).<sup>5</sup>

The first sentence of the last quotation has to be corrected. Independently of what is necessitarianism and how this view can or should be understood, it cannot be identified with functioning as a necessary condition that truth-makers produce truth of truth-bearers. It is clear that necessitarianism proposes how to define the necessary constraint for the relation of making true, for instance, by (7) saying that the existence of a truth-maker  $y$  necessitates that a proposition  $A$  is true.

How to formalize the conditional necessitarianism? First, it has the denial of (7) as its component. Thus, we have the following sequence of formulas:

$$(8) \quad \begin{aligned} (a) & \neg (\forall y \forall A (\mathbf{Ex}(y) \wedge y \in \mathbf{TrMk}^A(y) \mathbf{Nec} \mathbf{Tr}(A))); \\ (b) & \neg \exists y \neg \forall A (\mathbf{Ex}(y) \wedge y \in \mathbf{TrMk}^A(y) \mathbf{Nec} \mathbf{Tr}(A)); \\ (c) & \neg \exists y \neg \exists A \neg (\mathbf{Ex}(y) \wedge y \in \mathbf{TrMk}^A(y) \mathbf{Nec} \mathbf{Tr}(A)); \end{aligned}$$

$$(d) \neg (\mathbf{Ex}(y) \wedge y \in \mathbf{TrMk}^A(y) \mathbf{Nec} \mathbf{Tr}(A)) ???$$

The steps from (8)(a) to (8)(c) are justified by simple rules for negating quantifiers in the classical first-order logic. Why does question marks occurs in the assertion (8)(d)? The problem refers to the place in which the sign of negation should occur as related to **Nec** (for simplicity, I dropped quantifiers in (8)(d)). For convenience, let the box  $\square$  stand for **Nec**. The first possibility is to convert the problematic (8d) to

$$(9) \mathbf{Ex}(y) \wedge y \in \mathbf{TrMk}^A(y) \wedge \neg \square \mathbf{Tr}(A),$$

saying that  $\neg$  (7) means three things: (a) that an item exists; (b) it belongs to truth-makers of  $A$ , and (c) it is still not necessary that  $A$  is true. The second possibility consists in adopting the formula

$$(10) (\mathbf{Ex}(y) \wedge y \in \mathbf{TrMk}^A(y) \wedge \square \neg \mathbf{Tr}(A)),$$

as the denial of (7). However, one could observe that

$$(11) \neg \square (\mathbf{Ex}(y) \wedge y \in \mathbf{TrMk}^A(y) \wedge \mathbf{Tr}(A)),$$

$$(12) \square \neg ((\mathbf{Ex}(y) \wedge y \in \mathbf{TrMk}^A(y) \wedge \mathbf{Tr}(A))),$$

better fit logical intuitions of denying (7), but (12) appears as much more coherent with the view of necessitarianism for maintaining that it is impossible that truth-makers for  $A$  exist, but it is not true. Yet (see comments on (\*\*)) above) the problem remains whether not-true means false, possessing another logical value than being true-or-false or indicates a truth-value gap. Thus, the choice of basic logic can be fairly relevant. In order to simplify the issue, I interpret ' $A$  is not true' as ' $A$  is false', but nothing depends on this setting in my further considerations.

The positive content of conditional necessitarianism has its rendering in the formula (proposed by Merricks in the above quoted passage)

$$(13) \forall A \forall y (y \in \mathbf{TrMk}^A(y) \Rightarrow \square ((\mathbf{Ex}(A) \wedge \mathbf{Ex}(y) \Rightarrow \mathbf{Tr}(A))).$$

Accordingly, the conditional necessitarianism is the conjunction of (12)  $\wedge$  (10); (12) for the use of impossibility by Merricks himself. However, we should check whether this conjunction is actually equivalent to

$$(14) y \in \mathbf{TrMk}^A(y) \Rightarrow \square (\mathbf{Ex}(y) \wedge \mathbf{Tr}(A)).$$

Merricks is not right, because (14) as a consequence of (10) cannot be equivalent with its antecedent conjoined with something else, for instance, (13) in the considered case. (14) suggests still different interpretation of necessarianism to be obtained by weakening (7) understood as a conjunction  $\text{Ex}(y) \wedge y \in \text{TrMk}^A(y) \wedge \Box(\text{Tr}(A))$  to the implication

$$(15) \text{Ex}(y) \wedge y \in \text{TrMk}^A(y) \Rightarrow \Box(\text{Tr}(A))$$

The weakening in question consists in the fact that (15) is a consequence of (7) in the adopted interpretation.

Yet (15) does not close the issue. Having that necessarianism (its conditional version is a slight variant of what Merricks simply calls necessarianism) has its proper rendering in the implication  $\text{Ex}(y) \wedge y \in \text{TrMk}^A(y) \Rightarrow (\text{Tr}(A))$  with the added necessity component, we should decide in which place the operator  $\Box$ . We have the following possibilities (for simplicity and work with schemes similar to (\*)):

- (16) (a)  $\Box(y \in \text{TrMk}^A \Rightarrow \text{Tr}(A))$
- (b)  $\Box(y \in \text{TrMk}^A) \Rightarrow \Box(\text{Tr}(A))$
- (c)  $\Box(y \in \text{TrMk}^A) \Rightarrow (\text{Tr}(A))$
- (d)  $y \in \text{TrMk}^A \Rightarrow \Box(\text{Tr}(A))$
- (e)  $y \in \text{TrMk}^A \Rightarrow^\Box (\text{Tr}(A))$

Since (16)(b) follows from (16)(a), it is redundant. (16)(c) is implausible, because its antecedent is stronger than its consequent. Using the intuitive possible world semantics, it can happen that  $A$  is false at some world which verifies the sentence  $y \in \text{TrMk}^A$ . Due to the modal principle  $\Box A \Rightarrow A$ , necessity of  $\text{Tr}(A)$  is reducible to the factuality of  $y \in \text{TrMk}^A$ , unless we adopt a very strong modal logic in which every truth is necessary. This logic requires the Gödel rule  $A \vdash \Box A$  without restriction that  $A$  is a tautology. This solution, although possible for necessarianism, obscures the difference between truths of logic and factual truths.

In (16)(e), necessity qualifies the relation between the antecedent and the consequent. If we read this formula as ‘ $y \in \text{TrMk}^A$  entails  $\text{Tr}(A)$ ’, we have that  $y \in \text{TrMk}^A \vdash \text{Tr}(A)$  and, by using the deduction theorem, we obtain  $\vdash(y \in \text{TrMk}^A \Rightarrow \text{Tr}(A))$ . Consequently, the formula  $y \in \text{TrMk}^A \Rightarrow \text{Tr}(A)$  belongs to theorems. Of course, we should precede  $\vdash$  by **TMT**, because we assume that we work in the framework of the theory of truth-makers. Nothing prevents identification of  $\vdash^{\text{TMT}}$  with  $\Box^{\text{TMT}}$ , that is **TMT**-entailment with **TMT**-necessity. This suggests that (16)(a) can (should?) be written as  $\Box(y \in \text{TrMk}^A \Rightarrow \text{Tr}(A))$ .

$$(17) \Box^{\text{TMT}}(y \in \text{TrMk}^A \Rightarrow \text{Tr}(A)).$$

The above reasoning shows that 16(e) is equivalent to (16)(a), provided that **TMT**-entailment and **TMT**-necessity are co-extensional.

Logic is a good example for showing that (17) works. If the box  $\Box$  expresses logical necessity, we can drop the upper index. So we have  $\Box(y \in \text{TrMk}^A \Rightarrow \text{Tr}(A))$  and, by modal logic,  $\Box(y \in \text{TrMk}^A) \Rightarrow \Box(\text{Tr}(A))$ . The formula  $\Box(y \in \text{TrMk}^A)$  says that every possible world contains a truth-maker for  $A$ , which is necessary true that is,  $y$  is true in every possible world. So  $A$  is a truth of logic. I cannot recommend an automatic repetition of this reasoning for the conditional necessity instantiated by  $\Box^{\text{TMT}}$ . Although I assumed that it is co-extensional with  $\vdash^{\text{TMT}}$  this assertion requires further comments. In particular, although the symbol  $\vdash$  has the standard meaning in the context of **TMT**-entailment, it is problematic whether logical necessity and conditional necessity are species of a general necessity concept. The sign  $\Box^{\text{TMT}}$  expresses *de dicto* modality.

On the other hand, the necessarists about truth-makers want to speak about necessitation *de re*. In other words, (17) proposes an extensional approach to necessity, but (7) invites an intensional theory. Hence, (17) is probably too weak for developing the view that truth-makers necessitate truth of truth-bearers and make this job *de re*. Anyway, in my opinion, (17) says everything that can be said on the necessity of the truth-making relation on the basis of logic. In fact, the above analysis allows the conclusion that truth-making necessitates truth in the sense of being its necessary condition. Saying more precisely, the true assertion that  $y$  is a truth-maker for  $A$  acts as a necessary condition for the correct assertion that  $A$  is true. If someone considers a further metaphysical or/and ontological analysis of truth-making as required, he or has to go beyond logic.<sup>6</sup> The question is, do we need to go beyond logic with regard to propositions about empirically recognized facts? Since I am writing this paper to celebrate my friend Barry, consider the sentence

$$(18) \text{Barry and Jan are friends.}$$

What is the truth-maker of (18)? Let us say that the instance of the relation of friendship is **RF**. In other words, this relation obtains in the case of Barry and Jan, that is,  $\langle \text{Barry, Jan} \rangle \in \text{RF}$ . What does it mean to say that the truth-maker in question necessitates (18)? The first possibility is that there is a real connection (metaphysical, ontological, causal, etc.),

which necessitates the sentences saying that Barry and Jan are friends. I must confess that I am not able to translate this nexus into exact semantic terms. Certainly, it is not necessary that  $\langle \text{Barry, Jan} \rangle \in \mathbf{RF}$ . Although it occurs in the actual world, but it could be otherwise to my great regret. The second possibility is that (18) is a necessary truth. However, it is not, because it is not true in all possible worlds, but, fortunately, it holds in the actual world. This exactly means that (18) and  $\langle \text{Barry, Jan} \rangle \in \mathbf{RF}$  are connected in a particular world and perhaps in some conceptual replicas of it. In modal semantics of possible worlds, what is so-called the real world is distinguished as the point of reference for the accessibility relation, and the status of this object is precisely the same as any other world. Simply speaking, it is a model (or algebraic structure). Any serious talk about truth-makers requires an assumption that what is actual, has the privileged metaphysical character as something really existing and remaining in some ontological relations, like necessity or possibility. Yet the deep difference between ontology and formal semantics for modalities must be taken into account, otherwise it essentially obscures the entire issue. Since my approach uses the second, it is sufficient for me to say that, if this mode of speaking is preferred, truth-bearers of sentences have logical values in the real world according to truth-makers. Involving necessity does not contribute to the discussed issue, unless someone explains the concept of metaphysical necessitation.

My view is that logical necessity is the only well-defined kind of the concept expressed by the symbol  $\square$  and its meaning is captured by truth in all models, that is, validity. We can eventually introduce a more general notion, namely being valid in a specified class of models, which is determined by a set of axioms. However, necessity as related to a single model, seems to be an oddity. This is the reason to skip necessitation as attributed to truth-making. Perhaps my friend Barry would agree, or perhaps he would see things otherwise. Whatever the case, he will remain my true friend regardless.

## NOTES

- 1 I prefer the phrase ‘truth-maker’ over ‘truthmaker’ (similarly in the case “truth-making”; this convention does not concern quotations employed in this paper.
- 2 I omit restrictions required for the Liar paradox.
- 3 See Restall (1996) for an analysis based on relevant conditionals.
- 4 See Merricks (2007), Chapters 1–2, p. 5.
- 5 Merricks, 2007, pp. 5, 7.
- 6 See papers in Beebe and Dodd (2005), Monmoyer (2007), and Lowe and Rami (2009) for the present state of the debate on truth-makers.

## REFERENCES

- Armstrong, D. (2004). *Truth and Truthmakers*. Cambridge: Cambridge University Press.
- Beebe, H. and Dodd, J. (Eds.) (2005). *Truthmakers: The Contemporary Debate*. Oxford: Clarendon Press.
- Lowe, E. J. and Rami, A. (Eds.) (2009). *Truth and Truth-Making*. Stocksfield: Acumen.
- Merricks, T. (2007). *Truth and Ontology*. Oxford: Oxford University Press.
- Monmoyer, J. M. (Ed.) (2007). *Metaphysics and Truthmakers*. Frankfurt am Main: Ontos Verlag.
- Mulligan, K., Simons, P. M. and Smith, B. (1984). Truth-Makers. *Philosophy and Phenomenological Research*, 44, pp. 287–321; In: J. M. Monmoyer (2007), pp. 9–49, Lowe and Rami (2009), pp. 59–86.
- Rami, A. (2009). Introduction: Truth and Truth-Making. In E. J. Lowe and A. Rami (Eds.) *Truth and Truth-Making*. Stocksfield: Acumen, pp. 1–36.
- Smith, B. (1999). Truth-Maker Realism. *Australasian Journal of Philosophy*, 77(3): 274–291.
- Woleński, J. (2008). The Character of T-Equivalences. In: C. Dégremont, R. Keiff and H. Rückert (Eds.) *Dialogues, Logics and Other Strange Things: Essays in Honour of Shahid Rahman*. London: College Publications, pp. 511–521; In: Woleński, J. (2011). *Essays on Logic and Its Applications in Philosophy*. Frankfurt am Main: Peter Lang, pp. 231–241.
- Woleński, J. (2014). Truth-Makers and Convention T. In: A. Reboul (Ed.) *Mind, Values, and Metaphysics: Philosophical Essays in Honor of Kevin Mulligan*, v. 1. Dordrecht: Springer, Dordrecht, pp. 79–84.

---

# The Church of Sunk Costs

GLORIA ZÚÑIGA Y POSTIGO

Science and Humanities  
Ashford University  
8620 Spectrum Center Blvd  
San Diego, CA 92123  
United States

Email: [Gloria.ZunigayPostigo@ashford.edu](mailto:Gloria.ZunigayPostigo@ashford.edu)

Web: <https://www.ashford.edu/online-degrees/general-education/faculty/gloria-zuniga-y-postigo>

**Keywords:** Barry Smith, sunk costs, church, practical wisdom, mindfulness, meaningful life

---

## 1. WHAT IS A CHURCH OF SUNK COSTS?

In economics, a sunk cost is a cost that has been already incurred and, thus, is sunk in the sense that it cannot be recovered or eliminated even if the purpose for which it was committed is gone.<sup>1</sup> As such, sunk costs should have no role in our future decisions. Setting this economic wisdom aside, however, human beings often carry sunk costs into the opportunity cost considerations of future decisions. For example, we often decide to stay put in a particular situation despite how miserable it might make us feel, and we do this simply on the basis of the time, effort, or emotion we have already invested in it. Or, we view future decisions by the filter of specific psychological states—sadness or anger—that are the result of our unwillingness to abandon thoughts about what could have been or should have been the case in a past experience had it not turned out the way that it did.

Such attachments to sunk costs are psychologically problematic because they can drive us into rabbit holes of our own making, bringing about self-reinforcing rounds of disappointment, regret and, sometimes, even depression. Some psychologists suggest that our musings about what is *not* the case—more precisely, what *should have been* or *could have been* the case—may be inevitable given our cognitive ability to multitask, that is, to think about many things beyond the present task before us.<sup>2</sup> Our minds might wander when we are driving, attending a meeting, or even while talking with someone. And a most seductive direction for our multitasking minds seems to be the boundless realm of nostalgia. This multitasking feature of our thought is indeed an ex-

traordinary cognitive achievement, but if the content of our thoughts is consistently focused on sunk costs, then we are set to carve only a path of unhappiness.

For all the twenty-something years that I have known Barry Smith, I have observed him to be a master in the application of the principle of sunk costs and, largely as a result, to enjoy a fulfilling and meaningful life. If a jealous colleague betrayed him, Barry moved past this unpleasantness in full acceptance of sunk cost wisdom. Rumour has it that he has been observed to return ill will with kindness and generosity. If an uninformed audience did not fully grasp the depth of his argument, he did not linger in the miasma from the lesser in the group, but instead took the objections as fuel for finding new ways of demonstrating (with infectious excitement) the idea that he wanted to convey. If someone very close hurt him, I have never heard him say a bad thing about it. Since he finds wallowing in regret or resentment unnecessary and counterproductive, we have never discussed any persons or situations that he has discharged as sunk costs. But his gentle evangelization for the sunk cost principle when my life was at a crossroads on more than one occasion, combined with his exemplary application of the principle of sunk costs in his own life, have inspired my own musings on the subject over the years, mostly for my own personal considerations. The occasion of this Festschrift has led me to examine the phenomenology of sunk costs in a more formal way.

What I discovered in writing this essay is that there is more to the practical *application* of the principle of sunk costs than meets the eye. The successful application of the sunk cost principle as a moral guide seems to require a broader frame-



work of practical wisdom. And such a framework could not be imposed by design because the boundaries of a design are demarcated by the particular beliefs of the designers. This would present limitations not only to the kind of practical wisdom that could be attributable to the framework but also to the universal application of the principle of sunk costs. The framework of practical wisdom, then, has to be one that is discovered as a social order and, over time, perfected and shared in community. This latter attribute of *sharing* is not only central to community, it is also the feature that would make possible the dissemination of practical wisdom as an evolutionary social order. It is in this way that I came to think of the notion of a church in relation to sunk costs.

Although the word ‘church’ is most commonly employed as a noun to refer to a building for Catholic or Christian worship, such as the Church of the Holy Sepulchre in Jerusalem, the Biblical meaning for this noun is broader; it refers to an assembly of people brought together for a common purpose. In addition, the archaic verb ‘to church’ signifies a rite of purification, which is also fitting to our context. Putting both these meanings together in relation to Barry, we can understand the Church of Sunk Costs as an assembly of all those of us who have learned and benefitted from Barry’s example and advice and who, aware of our human limitations and propensity for error, are in pursuit of redemption and a good life through a purification from past experiences. Sunk cost wisdom indeed involves a purification from past experiences, and this purification is achieved by the application of reason. “Salvation,” Barry observes, “thereby becomes at least in part a human enterprise, in which man is called upon to measure and exercise his reason.”<sup>3</sup> Testimonial after testimonial in this Festschrift, we find the same pattern: Barry has affected individuals in ways that always lead to the examination of ideas—his or theirs—in a different light and with special attention to their contribution to a meaningful life. According to Barry, “a meaningful life is a life upon which some sort of pattern has been imposed—a pattern which is not some merely private thing which relates merely to what goes on inside your head but rather a pattern which involves also, in serious ways, your having an effect upon the world.”<sup>4</sup>

I call the pattern for the effect that Barry has had on others the *Church of Sunk Costs*. It is, as I have mentioned, a social order and, like any other social order, the existence of the Church of Sunk Costs has preceded our complete and clear awareness of it and of its ontological structure. This essay is thus the first attempt to articulate such a structure in three tenets:

1. Faith in the sunk costs principle;
2. Mindfulness in the here and now;
3. The striving for goals that bring about fulfillment and flourishing.

Before proceeding with a description for each of the above, it is important that I go back to the beginning, when I first met Barry, in order to set the proper stage for these descriptions.

## 2. ENCOUNTERING BARRY

I first met Barry Smith in Liechtenstein and, at that time, I was at a crossroads in my education. I was exploring the possibility of studying philosophy under his direction at the Internationale Akademie für Philosophie. At the time, I was in a graduate program in economics and involved in the research of economic value when, fortuitously, I had come across articles written by Barry. As a non-philosopher at the time, I immediately liked the clarity in his exposition. I also recognized in some of his writings the thing that I had been looking for but could not quite put my finger on. My mind was captured by assertions such as:

Austrian economics acknowledges in its fundamental axioms the methodological and ontological centrality of the economic agent.<sup>5</sup>

[About Menger he writes that...] Anyone, he argues, who has familiarity with economic phenomena (be they actions, choices, money, prices, contracts or debts) will acknowledge, independently of empirical testing, the truth of certain necessary propositions relating to these phenomena, and it is these propositions which must form the axioms of the science of economics. Economics becomes, therefore, an entirely aprioristic discipline.<sup>6</sup>

Necessary laws concerning economic kinds are, for the Aristotelian, no more problematic than necessary laws concerning natural kinds in other spheres.<sup>7</sup>

Yet however commonplace Menger’s conception of the objects and laws of economics may appear on this aprioristic, Aristotelian interpretation, it nevertheless stands in radical conflict with one methodological principle which has come to prevail as orthodoxy amongst philosophers and methodologists of science,

a principle which may be formulated as follows: scientific propositions are either contingent or necessary.<sup>8</sup>

The literature in economics is quite fascinating, especially the classical contributions from the members of the Chicago School, as well as from specialists in public choice theory, evolutionary economics, and others. But with regard to the philosophical foundations of economics, the literature is less satisfactory. So when I started reading Barry's papers, it felt like watching the parting of the clouds in the sky to make room for the sun to shine through. He writes, for example,

The ontological grammar of economic reality that is sketched by Menger can be seen in this light as providing a pre-empirical qualitative framework in whose terms specific empirical hypotheses can be formulated and specific mathematical models be given concrete interpretation. Such a foundation cannot itself be derived, on pain of circularity, either from empirical investigations of the more usual sort or from mathematical analyses. It must rather be derived at least in part—or so the apriorist argues—from that familiarity with particular economic phenomena which we are all of us able to acquire as economic agents.<sup>9</sup>

The Austrian economists in today's Vienna have long forgotten Menger, the modern-day Austrian economists were not addressing the value theoretical matters that interested me, and the mainstream of economics had not even heard of the Austrian economists at the turn of the twentieth century other than in a history of economic thought course. But here was a philosopher reminding us with his attention to a somewhat forgotten period that these oversights should not keep us from recognizing their contemporary significance. This was a revelation for me.

### 3. FAITH

The decision that I was confronting at the time I first meet Barry would not only have involved a switch in disciplines from economics to philosophy, it would have also included a move to another continent and an unfamiliar environment. For these reasons, I wanted to meet him. As a graduate student, I knew that not only was my future intellectual formation at stake, but that my emotional wellbeing, too, would be dependent on the kind of person that he turned out to be. Selfish dissertation directors too preoccupied with their own personal or professional pursuits can delay one's progress.

This is a trap that I wanted to avoid. I also wanted to avoid a domineering dissertation director who micromanaged every aspect of my research, or expected me to place his or her research as central to my investigations. In light of these concerns, meeting Barry was a pleasant surprise because he was warmer, kinder, and more generous than I had imagined him. I am quite certain that I knew when I first met him what my decision would be. And I should add that studying under Barry's direction was one of the best decisions that I have made in my life. But I am getting ahead of the story, for I need to get to the role of faith first.

My disenchantment with economics was not with it as a field of study for, as a graduate student, economics was still the most exciting discipline I had found until then. Rather, I was disenchanted with the prospect of becoming a professional "mathematoholic." Nonetheless, it was still unnerving to consider the possibility of leaving economics behind and starting from scratch in philosophy. I had already made an investment of time, effort, and emotional commitment to economics. For me, philosophy was a new and untested territory in which I had no formal training. Moreover, I already had a good idea that (and my experience studying philosophy has indeed confirmed this): philosophy is hard. Fascinating, enthralling, and compelling (to me) but, nonetheless, hard. What if I failed? What if I did not like it and found myself stuck with a bad decision? These were indeed all the wrong considerations to have with regard to a future investment of one's time, effort, and emotions because sunk costs do not—and should not—have a role in the opportunity cost considerations of future choices. Whatever was the cost of my education in a discipline that I was not to pursue further, this cost was an unrecoverable and unavoidable cost and, thus, a sunk cost.

Barry has inspired many to change career directions: engineers and mathematicians have become philosophers, philosophers have become knowledge engineers and biomedical ontologists, and so on. This was also the case for me. In making my choice to pursue philosophy, Barry's advice helped me to recognize the wisdom of the principle of sunk costs as a principle of practical wisdom, and to take a leap of faith in the direction of philosophy. As a student of economics, I was aware of the principle of sunk costs already. However, I had not really thought of applying this principle outside of business decisions concerning production and into the personal realm of decisions regarding the future deployment of my own human capital. This is how I first encountered the first bit of Barry's practical wisdom built on a ground of philosophical foundations of economic theory. Shortly thereafter,

I was a graduate student of Barry's, not in Liechtenstein as I had expected, but at the University at Buffalo, where he had just accepted a full professorship. In retrospect, I am glad to report that my experience as a graduate student in Buffalo was not only better than I expected, it ranks among the happiest and most fulfilling times in my life.

I did not discover until many years later, however, that the application of the principle of sunk costs is not just a rational and mechanical response to future production decisions in business or, as I have presented here, in the personal realm of decisions. A fortiori, the application of the principle of sunk costs demands *faith*. This requires some explanation.

I was at another crossroads in my life around four years after my graduation from Buffalo. I had been offered a position of Research Director at a large institute in South America but, unbeknownst to me, the president of this organization had made this decision unilaterally and had not informed his Board of this decision. This was not the regular hiring procedure at the institute and, understandably, the older directors at this institute felt slighted and made this feeling very clear to me. One of these directors asked me to sign a contract that was not even close to the offer that the president of the institute had made verbally and which I took at his word. I remember him handwriting each element of the offer as we talked in his mansion, but this agreement was not in the contract presented to me. So I specified to the director the offer that the president had made, and this director informed me that such an offer was impossible. When I asked to discuss the matter directly with the president, I was told that he does not involve himself in such details but that he would be informed of my request. The next day I received an email indicating that the offer had been rescinded, and I never again heard from the president.

This eleventh hour contract breach was devastating to me financially because I had already committed thousands of dollars in the arrangements for my move, the transport of my belongings, and the three months' rent for my new place. The latter alone was already \$6,000 in the rather expensive neighborhood of El Olivar, near the institute. But I was unable to recover any of these costs. If there ever was a call for sunk cost wisdom, this was indeed the most perfect case for its application. Barry knew of this situation because he had been a supporter of my being hired for this position. In this situation, too, Barry reminded me of the principle of sunk costs and asked me to refrain from thinking about my financial loss. But, for me, not even sunk cost wisdom could turn my acceptance of this situation into anything other than a bitter pill to swallow. In an effort to lift my spirits, Barry told

me to have *faith* and promised to send work my way. I was not quite sure what he meant by faith at the time but, in retrospect, I think that he was telling me to have faith in what the future could bring, that is, to be forward looking. I must admit that not until I wrote this essay did I come to the full realization of the role of faith in the application of the principle of sunk costs.

I do not have a problem embracing certain things on faith and I think that, setting religion aside, we all have faith in someone or something at some point in our lives if we are courageous enough to take a risk. According to one understanding, faith is to accept with certainty that which is hoped for and to hold the conviction for what is not yet seen.<sup>10</sup> The risk is to be wrong in what we accept on faith. Consequently, faith cannot be divorced from reason and prudential judgment in order for faith to be distinguishable from a roll-of-the-dice decision. When I switched disciplines, I had faith that I had made the right choice. I couldn't know for sure, but there was sufficient rational support for my making this choice, and so I followed this path. So long as what we accept on faith is supported by reason and prudential judgment, then the faith that we place on, say for example, a friend or a spouse is no different from the faith upon which we accept rationally defensible scientific theories for which there is no definitive proof. We could be wrong in all of these cases, of course, and when this happens, the only productive way to move forward is to change the *bearer* of our faith from whatever it had been—e.g., a perceived honorable offer of employment, in my case—to the principle of sunk costs. The challenge is that transferring one's faith from one bearer to another is much more difficult than one can imagine. In the most devastating cases, I dare say, this transfer seems almost impossible. But there is one other tenet in the structure of the Church of Sunk Costs that can facilitate such a transfer, and this is the principle of mindfulness.

#### 4. MINDFULNESS

Mindfulness is the process of bringing one's attention to the present moment. This involves shutting off the mind's wanderings. And there is a particular mechanism for deploying mindfulness that is represented by three building blocks of consciousness regulation.<sup>11</sup>

- i. Intention—this refers not only to the directedness of the present experience but, more specifically, to a directedness that targets the most enlightening *aspect* of the experience. The idea of finding the aspect of an experience

that is the most conducive to one's understanding or growth is perhaps a difficult concept to grasp within the context of intentionality in Western philosophy. In the Buddhist tradition, however, the intentional directedness to the present experience goes hand-in-hand with a vision for personal growth. As such, the targeted aspect of the experience is that which will best enhance the path to greater enlightenment. The search for and subsequent discovery of such an aspect of the experience is an evolving process given the dynamic nature of our experiencing *present* experiences.

- ii. Attention—this is the focus on the present experience as it is presented and, above all, avoiding any interpretation of the present experience that would switch the focus to other feeling-states from past experiences (e.g., anger, fear, anxiety, excitement, and so on). As such, this focus is also critical in setting forth a psychological healing process.<sup>12</sup> Above all, this focus is essential to the success of i (above) and iii (below). More specifically to our examination of sunk costs, this focus allows us to develop the skill of switching the focus of attention, and thus inhibiting negative emotions from past experiences whose sequelae might be in our present experience. Accordingly, this skill makes possible the transfer of faith from a situation that did not work out as hoped for to the wisdom of sunk costs that allows us to be forward looking.
- iii. Attitude—this refers to how we attend the present experience. We can bring a positive attitude to our mindfulness—e.g., a compassionate attitude, or an attitude of peacefulness and forgiveness—but we can also attend to our present experience by the filter of sadness or depression at one extreme to anger and desire for vengeance at the other extreme. If we attend to our experience with a negative attitude about our present lot, then we attend to the experience of feeling negatively about our lives. By contrast, when we attend to our present experience with compassion (including compassion for oneself), then one attends to the experience of feeling restored. This self-regulation of attitude is learnable,<sup>13</sup> and it is reinforced by having a goal that offers a more rewarding state of mind than that which is achieved through a negative attitude. I shall address this in more detail in the next section.

Cognitive psychologists have examined the attentional abilities that can be developed from mindfulness, including the ability to shift focus from mental states at will.<sup>14</sup> This is a

powerful ability. It is not surprising, then, that many philosophical traditions have reminded us to practice mindfulness. The state of mindfulness in Shinkataza, for example, is a dedicated awareness of what is happening to us in the moment, and also the immediate effects of such happenings in us.<sup>15</sup> Some claim that this ancient Buddhist practice of mindfulness influenced some religious traditions and popular culture—from those practiced by Catholic monks, rabbis, and Episcopal priests, all the way to modern-day yoga and martial arts instructors.<sup>16</sup>

Barry is as much an urban-Buddhist as he is a socialist, so no one could ever attribute to him either a formal Eastern philosophical influence, nor its modern-day popularized versions. Moreover, I have never heard Barry speak of mindfulness. However, Barry is a man who not only accomplishes more in the same amount of time as anyone else who is similarly driven, he is also productive on many fronts. On a light day for Barry, he may be writing a paper, while reading on another topic, teaching a course, and responding to emails almost instantaneously. The only way that he can do this is by focusing on one task at the time, in full attention and, from what I have witnessed, in a joyful way. We could call this discipline, sure, but mindfulness brings to relief a finer-grained description of Barry's productive efficiency. We might not be able to achieve the masterful level of mindfulness that Barry can muster, but he has shown us the way by example.

## 5. THE STRIVING FOR GOALS THAT BRING ABOUT FULFILLMENT AND FLOURISHING

Let us tie together what we have covered so far. The success of our application of the principle of sunk costs is dependent on our mindfulness. In other words, placing one's faith on the wisdom of sunk costs and applying mindfulness to reinforce this end can help us to shift our minds away from past losses and toward the present. Together, these two tenets constitute a good assembly of problem-solving skills applicable to discrete cases. But without the motivation to move forward, that is, something for which to strive, we might be tempted to look back at sunk costs again and to consider ways in which we could recover what we lost. So we must seek for a goal, but not just any goal. We need to seek for a goal that brings about fulfillment and flourishing because such a goal will keep us looking forward even if we have further setbacks and losses. "What makes a life worth living," says Barry, "has something to do with what you do, here on Earth..."<sup>17</sup>

[It] depends not on your, or other people's, beliefs or feelings, but on what you do, on what you achieve, and thus on the degree to which through your efforts you succeed in imposing a pattern on your life which has some implications also for the world around you.<sup>18</sup>

The goals that we strive for, then, should give our lives direction as well as a purpose that is not aimed merely at fulfilling our desires and abilities. In other words, the purpose should be bigger than ourselves.

## 6. BARRY'S EFFECT ON OTHERS

Barry has not only followed the principle of sunk costs, he has also lived a life focused on the tasks presented before him, one at the time, and he has directed his life toward a purpose that transcends his own self-interests. I view this purpose as threefold: (1) to examine ideas for their own sake, (2) to serve others who seek his help, and (3) to live honorably. I would like to address each of these briefly. First, let us consider the task of examining ideas for their own sake. For those who reach prominence in their own time, it is not always easy to demarcate the line that separates their self-interested motives from their love of ideas. Indeed, it is the duty of a scholar to present his or her contributions to the circles in which they will be most productive. This demands the effort to make one's contributions known by means of teaching, presenting, and publishing. Barry's speaking skills are impressive, combining penetrating analysis with humor and, many times, silliness in order to drive a point home. His success in teaching and presenting is thus well-known in the philosophical circles and institutions in which he has chosen to participate actively. At only 65, Barry's list of publications *alone* (see the Appendix to this volume) is the length of an average-size dissertation. It is most certainly longer than mine, and let me add parenthetically that I know that Barry would have preferred that my dissertation had been *even* shorter given his penchant for brevity.<sup>19</sup>

The sheer volume of his contributions, however, is most certainly not the measure of his pursuit of ideas for their own sake. The mark that Barry has made lies in the effect that he has had in philosophy. Barry, along with Peter Simons and Kevin Mulligan, brought new attention to the ontological aspect of the correspondence theory of truth. As such, this illustrious trio made an important mark on the examination of truth, a central subject in philosophy. Barry has also brought attention to Austrian philosophy and the philosophy of Austrian economics, which has led to new re-

search in philosophy and economics based on the contributions of turn-of-the-twentieth century Austrian thought.<sup>20</sup> Barry has also championed thinkers who have been either unknown or quite obscured in contemporary philosophical literature, such as for example Anton Marty, Christian von Ehrenfels, Johannes Daubert, Adolf Reinach, and Roman Ingarden. This effort has had a profound impact on many if we consider the vast number of citations that his work commands. Moreover, Barry has built the ontology specialty at the department of philosophy at the University at Buffalo, for which it is best known today. He did this through his courses and research interests, as well as by bringing former students and colleagues from Germany and elsewhere to add to the new ontology specialty of the department. There are many other examples of Barry's contributions to philosophy that are mentioned in other articles of this Festschrift, but the chief point that I would like to make is that, although he has been widely recognized for his professional contributions and has received prestigious awards, the fame that Barry has sought has been primarily for the ideas that he has pursued rather than for fame itself.

This brings me to the second aspect of the larger purpose that Barry has pursued: the service to others. All those who know Barry, even superficially, know that he is generous with his time despite his ambitious work schedule. This generosity ranges from replying to emails quickly to more substantial help such as reading a paper, or making a significant impact in someone's career with support for a grant, post-doc, internship, or teaching position. He has helped many—students, former students, colleagues, friends and strangers alike, most likely even more than the great many who already admit to this—and without seeking gratitude or quid pro quo conditions. It might be the case that some who have been on the receiving end of his generosity do not recognize it for what it is. But I do not see such situations burdening Barry in the least because he has a broader purpose that motivates him to serve others. Barry helps simply because he wants to facilitate the pursuit of other people's plans if it is in his hands to do so. It would seem also that this purpose also supports the first aspect of this broader purpose mentioned above—the pursuit of ideas for their own sake—because Barry is also a profoundly modest man. He would not view his work as being the only important contribution to philosophy. This might come as a surprise to those who have witnessed, in a class session or at a conference, Barry's demonstrations that pretend to indicate self-importance. For example, who could forget his unlimited praise of the British for all that is good in the world: walls

(meaning, property rights), the rule of law, efficient language, and good philosophy, with some concessions to the contributions by Brentanian-influenced Austrian and Polish philosophers, and a few others (a few German and French, plus one Nicaraguan). Or, his claims lauding male superiority to such an extreme measure as to make clear to any keen observer that he does not hold such an absurd view. It is precisely his modesty that allows him to set aside his concern for how he would be viewed as a person by anyone who is not previously aware of his tactics to shock an audience out of their uncritical attachment to a cause by questioning their own point of view and, thereby, to give them the chance to consider an alternative view. Only a modest man recognizes that the pursuit of ideas for their own sake is not achievable by any one person alone but, rather, only as a purpose carried by many, and the more who can be enlisted, the better.

The third aspect of Barry's broader purpose in life is, as I see it, his commitment to living honorably. What does this mean exactly? We can think of living honorably as acting consistently with honesty, generosity, kindness, and loyalty and observing morally good behavior such as standing by one's word, promises, and duties. All of these attributions are true for Barry. But the point that I want to make here is that living honorably also means living well. Despite his legendary capacity for hard work, I have never seen Barry trade an opportunity for enjoyment of fine food and wine, good jazz, a social gathering with friends, or true love, for work. Barry has indeed found true love and good friendships because he wants to live a fulfilling life, one that involves his dedication to his calling but also a life that is filled with other beautiful things that life has to offer.

We often mistake differences in the lifestyles of others as flaws that need correcting. Europeans and Latin Americans, in my casual observation, embrace long vacations as not only necessary for survival but as activities that must never be mixed with any kind of work. People who hold this view may see Barry as a workaholic. In the United States, however, many view vacations as interruptions to their work that should be either minimized or mixed with some work in order to justify the need to take one. People who hold this view may see Barry as hard working. As a Basque-Peruvian Catholic, raised in a Methodist-American school in Peru, who later moved to the United States to attend college, subsequently to become an American citizen, and then resettling in Europe, I straddle both views. Accordingly, I can understand how someone holding any of these views could feel horrified at the extreme opposite view. What we must recognize, however, is that there is no single script for liv-

ing a happy life. We must discover what is the right balance of work and leisure for each one of us. I have no doubt that Barry has sought this Aristotelian Golden Mean for leading a happy life, and I am even more certain that he has found it.

And *this* is how Barry has built what I call the Church of Sunk Costs and has, thereby, carved a meaningful life that amounts to much more than professional accolades. He has shown by example that the Church of Sunk Costs is a sound secular guide for practical wisdom. Most notably, and despite his prodigious appetite for work, Barry seems to have a good life. As far as the rest of us are concerned, the effects of Barry's Church of Sunk Costs can be as extraordinary as we want them to be. Not least of all, we can see sunk costs for what they really are: distractions from living a good life. Hence, a setback that we may encounter just means that we can set our eyes on the opportunities that we have yet to take, the people we have yet to meet, and the ideas we have yet to entertain. For opening my eyes to all this, I thank you Barry!

## NOTES

- 1 Baumol and Willig 1981, p. 406
- 2 Killingsworth and Gilbert 2010
- 3 Smith 2002, p. 7
- 4 Smith 2002, p. 10
- 5 Smith 1986, p. 2
- 6 Smith 1986, p. 2
- 7 Smith 1986, p. 3
- 8 Smith 1986, p. 3
- 9 Smith 1990, p. 279
- 10 Hebrews 11:1
- 11 Shapiro, Carlson, Astin, and Freedman 2006, p. 375
- 12 Shapiro, et al. 2006, p. 376
- 13 Shapiro, et al. 2006, p. 377
- 14 Posner, 1980
- 15 Scharf 2014, p. 941
- 16 Scharf 2014, p. 942
- 17 Smith 2002, p. 10
- 18 Smith 2002, p. 13, brackets added
- 19 See Erion 2017, pp. 6-8
- 20 See *Austrian Thought: Philosophy and Economics*, Zúñiga y Postigo and Williford (forthcoming)

## REFERENCES

- Baumol, W. J. and Willig, R. D (1981). Fixed Costs, Sunk Costs, Entry Barriers, and Sustainability of Monopoly. *The Quarterly Journal of Economics*, 96 (3): 406-431.
- Erion, Gerald J. (2017). Briefly, On Brevity. *COSMOS + TAXIS* 4:2+3, 6-8.
- Killingsworth, M. A. and Gilbert, D. T. (2010). A Wandering Mind is an Unhappy Mind. *Science*, 320: 932.
- Posner, M. (1980). Orienting of Attention. *The Quarterly Journal of Experimental Psychology*, 32 (1): 3-25.
- Scharf, R. (2014). Mindfulness and Mindlessness in Early Chan. *Philosophy East & West*, 64: 933-964.
- Shapiro, S. L., Carlson, L. E., Astin, J. A., and Freedman, B. (2006). Mechanisms of Mindfulness. *Journal of Clinical Psychology*, 62 (3): 373-386.
- Smith, B (1986). "Austrian Economics and Austrian Philosophy." In Grassl, W and Smith, B (eds.), *Austrian Economics: Historical and Philosophical Background*. New York University Press, New York.
- \_\_\_\_\_ (1990). Aristotle, Menger, Mises: An Essay in the Metaphysics of Economics. *History of Political Economy*, Annual Supplement to vol. 22 (1990), (published simultaneously B. Caldwell (Ed.), *Carl Menger and His Economic Legacy*, Durham and London: Duke University Press, 263-288.
- \_\_\_\_\_ (2002). The Meaning of Life and the Measure of Civilizations. In: *The History of Liberalism in Europe*, Brochure 9. Paris: CREA/CREPHE.
- Zúñiga y Postigo, G. and Williford, K. (Eds.). (forthcoming). Austrian Thought: Philosophy and Economics, *Axiomathes*.

---

# Trouble Up at t'Ontological Mill: An Inconclusive Dialog A WHIMSICAL POSTSCRIPT IN ONTOLOGICAL FOLKLORE

PETER SIMONS

Department of Philosophy  
Room 5009  
Arts Building  
Trinity College  
Dublin 2  
Ireland

Email: [psimons@tcd.ie](mailto:psimons@tcd.ie)  
Web: [sites.google.com/site/petermsimons/](http://sites.google.com/site/petermsimons/)

**Keywords:** Barry Smith, ontology, SNAP, SPAN, continuants, occurrents

---

“One on't crossbeams gone owt askew on t'tredle.”  
Monty Python: *The Spanish Inquisition*

**Background:** Grenon and Smith (2004) propose a framework for the ontology of things in space and time involving and invoking the distinction between continuants and occurrents, which has become a key element of Basic Formal Ontology (BFO). The terminology of SNAP (from “snapshot:” state of a continuant at a time) and SPAN (how an occurrent develops over an interval or timespan) occurs in that paper's title. While any commonsense ontology will have a place for both continuants and occurrents, there is much room for philosophical debate on whether one of them is more basic than the other, or can be reduced to the other, or whether they are equally fundamental, or whether they are two different perspectives on the same reality. Grenon and Smith opt for the last of these. They call the accounts of continuants (SNAP) and occurrents (SPAN) both “ontologies.” They do not have a single ontology of all that is in space and time. This dialog throws a few of the common arguments around a bit and comes to no sure conclusion. But one of the characters bears a faint resemblance to a certain Buffalonian philosopher.

**Abstract, Grenon and Smith (2004):** We propose a modular ontology of the dynamic features of reality. This amounts, on the one hand, to a purely spatial ontology supporting snapshot views of the world at successive instants of time and, on the other hand, to a purely spatiotemporal ontology of change and process. We argue that dynamic spatial ontology

must combine these two distinct types of inventory of the entities and relationships in reality, and we provide characterizations of spatiotemporal reasoning in the light of the interconnections between them.

[Time: the present. Scene: A Philosophy Department Common Room. Four ontologists are discussing change. Three-Dimensionalist (3D) and Four-Dimensionalist (4D) are disputing, the two others are listening.]

3D [in tweed jacket with leather elbow patches, cord trousers, brown Oxford brogues, checked shirt with striped school tie, with chalk-stained fingers, is speaking donnishly at the blackboard]: ... so you see I do not need your events at all. An event is merely a succession of changes to a substance, or what you call a “continuant” (sniffs). Let *C* be any changing “continuant,” such as this piece of chalk, a gyrocompass, or a chameleon. Now as Aristotle says in the *Physics* ...

[4D (in shorts and T-shirt with baseball cap and trainers) can contain himself no longer. Throwing down the copy of *Scientific American* that he had been browsing, he jumps up and excitedly runs through Lewis's “temporary intrinsics” argument from *On the Plurality of Worlds*, (Lewis 1986, pp. 202–205) to the effect that because of the threatening inconsistencies in the notion of change, it is best to take *C* to have temporal parts, i.e. be an occurrent. 3D sighs: he has heard it all so many times before.]



[At this point a third and smartly dressed ontologist springs to 3D's defence with a "May I?" With deft and practiced movements, he sweeps chalk dust from the table, places his elegant and state-of-the-art laptop on the clean space, plugs it into the projector, pulls a white screen down in front of the dusty blackboard and starts to click through a large PowerPoint file to reach a slide. He is: SNAP-SPAN Metaontologist.]

SSM: I can avoid the inconsistencies by distinguishing between SPAN, which looks at occurrents over time, and SNAP, which is a series of snapshots (instantaneous states) of continuants at different times (shows several slides in quick succession to emphasize his point).

4D (languidly): I can show using your instantaneous states that *C* has temporal parts after all.

SSM (surprised): How?

4D: I just sum all the instantaneous states together.

SSM: But you can't do that.

4D: Why not? I just did.

SSM: But it's inconsistent. If *C* changes, then its properties at one time are contrary to those at another. What you get by summing states is not *C* but *C*'s life. That's not a continuant, it's an occurrent.

4D: Precisely. *C* and *C*'s life are one and the same.

SSM: But you can't say that. It goes against common sense. It's nonsense.

4D (sarcastically): I don't recognize Oxford ordinary language prohibitions. I am a scientist.

SSM (determinedly): Here's an argument. *C*'s life, being an occurrent, has all its parts essentially. So, if *C* is *C*'s life, *C* could not have existed for a longer or shorter time than it did. But *C* obviously could have ceased to exist earlier or later than it did. So, there is a modal difference between *C* and *C*'s life, which means they are essentially distinct. Even if a continuant exists only for an instant, it could have existed for longer, but an instantaneous occurrent has to be instantaneous. So, no continuant can be an occurrent.

[At the word "essentially," 3D, who had been disconsolately fingering his well-used copy of Liddell and Scott's *A Greek-English Lexicon*, brightens up for a moment, only to lapse into despond again at the word "occurrent."]

4D (briskly): I don't accept your modal distinction. For me what you call *C*'s life could have been longer or shorter. I see no need for the distinction. All objects in time are occurrents.

SSM (persistently): But we cannot identify and recognize occurrents except by identifying and recognizing continuants (Strawson 1959).

4D (sneeringly): That's epistemology. I am an ontologist. Anyway, Strawson may be wrong (Moravcsik 1970).

SSM (recovering): I agree that we need occurrents in our ontology. But like Wiggins (2001), and unlike you, or 3D, I am a continuant-occurrent *dualist*.

4D: By your own admission you have instantaneous states in SNAP, and I have just shown you how to sum these mereologically to give temporally extended things, which are in SPAN. So, you are hoisted by your own petard. Admit it, your dualism is unnecessary and by Ockham's Razor continuants should be discarded in a modern scientific ontology.

[3D groans quietly]

SSM: Let me clarify what I mean. By "instantaneous states" I don't mean entities in the world, but momentary snapshots, consistent representations of what there is at an instant.

4D (incredulously): You mean you don't take them ontologically seriously after all?

SSM: Yes, but not as entities.

4D (with heavy irony): Oh I'm sorry, I thought we were doing ontology. I didn't quite catch the silent quotation marks. That's what linguists do all the time isn't it? They confuse entities with representations. I thought you were against that.

SSM (huffily): I am. Vehemently. Medical Informatics is rife with it, but I'm putting them right. What I mean is that because of change you cannot put different SNAP ontologies together consistently. You need a multiplicity of SNAP on-

tologies, one for each different time, and a SPAN ontology for occurrents.

4D: Why can't you put different ontologies together to get a bigger and more adequate one?

SSM: Because by an "ontology" I mean a consistent theory of things all of which can be mereologically summed.

4D (puzzled): And why can't I put different SNAP ontologies together?

SSM: Because then you would have inconsistencies.

4D (more puzzled): Why? Why can't I merge SNAP ontologies just as easily as I summed instantaneous states (before I understood you — er — correctly)?

SSM (triumphantly): Because then either you'd have a SPAN ontology, which fails to recognize continuants, or you'd have continuants which have incompatible properties. A single ontology cannot encompass both continuants and occurrents, and remember, no continuant can be an occurrent.

[4D lapses into head-shaking silence. At this point the fourth ontologist, who has kept silent until now, clears her throat. She is wearing elegant jeggings and top from a Milan fashion house. Her laptop is metallic pink. She is agnostic about 3D/4D but believes that ontology forms a single unified discipline or field. She is: Unified Field Ontologist.]

UFO (to SSM): So are you saying there is no such thing as ontology, Aristotle and Wolff's science of being *qua* being?

SSM: Yes. I used to think there was, but Medical Informatics changed my mind. Since an ontology concerns only things which can be summed mereologically, and not all things can be summed mereologically, there is not one ontology but many.

UFO: What's wrong with the mereological sum principle, that any two or more entities have a mereological sum?

SSM (amusedly): Would we really say there is a single object consisting of the number 9, the color blue, my computer and the first five minutes of this year's UEFA Cup Final? We don't talk like that.

UFO (flashingly and without a trace of sarcasm): I don't recognize Oxford ordinary language prohibitions. I am a scientist.

SSM (coaxingly): Come on, you have to admit such monstrous (Fine 1999) transcategorial sums are absurd.

UFO (defiantly): Go ahead, make my day. Show me the contradiction.

SSM: Erm ... well you have to admit they are pretty bizarre and weird.

UFO: I don't deny that, but so are lots of things. Anyway, even if I admit that there are no transcategorial sums, why does that mean we cannot have a single ontology?

SSM: Because by an "ontology" I mean a consistent theory of things all of which can be mereologically summed.

UFO: Oh yes, so you said. But there's a lot more to ontology than mereology. For instance, if John kisses Mary there are John and Mary, both of whom are continuants, and the kiss, which is an occurrent. They may not (*pace* Lewis, Armstrong and others) be parts of a single mereological whole, but you have to admit they are connected.

SSM (smugly): Oh yes, I do. Entities in all my different ontologies are linked by relations. The theory of these linking relations is what I call "metaontology."

UFO (puzzled herself): But surely the relations in your metaontology are in the world?

SSM (decisively): Yes of course. I am a realist. Well, except that some of the relations are internal, but let's not worry about that.

UFO: So why is the whole consisting of all your ontologies together with metaontology not Aristotle and Wolff's science of being?

SSM: Because the whole is inconsistent.

UFO: Not if you do the job properly.

SSM (firmly): By keeping ontologies confined to consistent maximal mereological ones, I rescue as much of that doomed project as is possible.

UFO: Why privilege mereology?

SSM: Because it's central to ontology.

UFO (pensively): I don't disagree there. But let's see, you presumably think that identity is at least as fundamental to ontology as mereological relations are?

SSM (suspiciously): Yees — go on.

UFO: Well suppose I confine an ontology to all that can consistently be said of all the things that can be glued together using the identity relation. Then I'd have as many ontologies as entities (smiles cheerfully).

SSM (outraged): But then you couldn't even say in one ontology that  $a$  is not identical to  $b$ , or that  $a$  is a proper part of  $b$ ! That would be intolerable!

UFO: I could deal with all the linking relations between distinct existences in my metaontology, which would contain all yours does and more still, to cope with difference and mereology.

SSM: That would be ridiculous.

UFO: It's no different in principle from what you do.

SSM (trying another tack): But anyway, identity isn't a real relation. Your ontologies would contain only such trivialities as that  $a = a$  and that  $a$  exists. All or nearly all the interesting parts would be relegated to the metaontology.

UFO: The same as in your case. Only once all the fun is in the metaontology I can forget the silly ontologies and just rename the whole thing "ontology," and I get what I want.

SSM: But at least my ontologies are consistent. Your metaontology would not be.

UFO: Why not?

SSM: Because you can't put all the ontologies (including the mereologies) together consistently.

UFO: You can if you do the job properly.

SSM: You said that before. Let's not repeat ourselves. What do you mean by doing the job properly?

UFO: You admit that each of your ontologies is consistent.

SSM: Of course. It's designed to be.

UFO: So a consistent ontology is one that could be completely true?

SSM: Yes of course.

UFO: So all the ontologies could be true together.

SSM (condescendingly): Just because some judgments are consistent and some other judgments are consistent doesn't mean the whole lot are consistent. Take any contingent judgment, say that  $p$ . Each of  $p$  and its negation  $\text{not-}p$  is consistent but the pair  $\{p, \text{not-}p\}$  is not. In ontology it's much more complicated but the principle is the same.

UFO (doggedly): Suppose one of your ontologies  $O_1$  is not just consistent but actually true.

SSM: All right.

UFO: And another one  $O_2$  is also true.

SSM: Yes. That could happen.

UFO: Then  $O_1 + O_2$  is also true, so it is consistent.

SSM: I'll grant you it works in that simple case, but in the full-blown case ...

UFO (smoothly): If you do the job properly, each of the ontologies is true, as is the metaontology, so the whole consisting of all of them is true. So the whole is true, and therefore consistent. That's what I mean by doing the job properly.

SSM: But look, it just can't be done. I used to think like you, but Medical Informatics has convinced me it cannot.

UFO: Surely you aren't suggesting that truth be relativized to a time, or an ontology, or a view, or in some other way.

---

SSM (stiffly): Of course not. Truth is absolute. It's just that some of the things traditional ontologists thought could be done cannot be done without getting into contradictions ...

3D (perking up, *sotto voce* in UFO's left ear): You could call them "antinomies of pure reason."

SSM: ... so we have to pull our horns in and be more modest.

4D (catching on, *sotto voce* in UFO's right ear): You could call it "metaphysics within the bounds of sense."

SSM (noticing the whispering): What?

UFO (brightly): So — you are a follower of Kant then?

SSM (affecting not to hear the name): Who? Anyway, it's getting late. Anyone fancy a glass of wine?

## REFERENCES

- Fine, K. (1999). Things and their parts. *Midwest Studies in Philosophy*, 23: 61–74.
- Grenon, P. and Smith, B. (2004). SNAP and SPAN: Towards dynamic spatial ontology. *Spatial Cognition and Computation*, 4(1): 69–103.
- Lewis, D. K. (1986). *On the plurality of worlds*. Oxford: Blackwell.
- Moravcsik, J. (1970). Strawson and ontological priority. In: R. J. Butler (Ed.) *Analytical philosophy: Second series*. Oxford: Blackwell, pp. 106–119.
- Strawson, P. F. (1959). *Individuals*. London: Methuen.
- Wiggins, D. (2001). *Sameness and substance renewed*. Cambridge: Cambridge University Press.

END

## Appendix: Publications by Barry Smith

### BOOKS

1. Barry Smith (Ed.), *Structure and Gestalt: Philosophy and Literature in Austria-Hungary and Her Successor States*, Amsterdam: John Benjamins, 1981, x + 348pp.  
Reviews:  
P. M. Simons, *Conceptus*, 17 (1983), 131–134.  
J. Shearmur, *Free Life*, 3/2 (1983), 16–17.  
W. Stock, *Philosophischer Literaturanzeiger*, 37 (1984), 93–96.  
R. Cardinal, *Explorations in Knowledge*, 2 (1985), 68–69.
2. Barry Smith (Ed.), *Parts and Moments. Studies in Logic and Formal Ontology*, Munich: Philosophia, 1982, reprinted 2001, 564pp.  
Reviews:  
V. Muñoz Delgado, *Estudios Filosóficos*, (1982) 38, 611–613.  
I. Niiniluoto, *Zentralblatt für Mathematik*, (1983) 489, 15–16.  
D. P. Henry, *History and Philosophy of Logic*, (1983) 4, 228–229.  
F. G. Asenjo, *Rivista Latinoamericana de Filosofia*, (1983) 9, 174–177.  
U. Charpa, “Neues zur Lehre von den Ganzen und Teilen”, *Philosophische Rundschau*, 1/2 (1984), 52–59.  
J. M. Salanskis, “Parties, Moments et Modalités”, *Critique*, 443 (1984), 290–296.  
R. Sokolowski, *Review of Metaphysics*, 38 (1984), 140–142.  
B. Schuwey, *Philosophy and Phenomenological Research*, 45 (1985), 474–476.  
G. Berger, *Noûs*, (1986) 20, 115–121.  
J. Woleński, “Czeski i momenty”, *Studia Filozoficzne*, 1–2/242–243 (1986), 191–195.  
D. Münch, *Philosophischer Literaturanzeiger*, 39 (1986), 272–276.  
R. Casati, “Laboratorio husserliano”, *Fenomenologia e scienze dell’uomo*, 2/1 (1986), 283–287.  
R. Tragesser, *Husserl Studies*, 5 (1988), 169–173.  
N. Hentschel, *Zeitschrift für Ganzheitsforschung*, 32 (1988), 137–139.  
G. Schenk, *Wissenschaftliche Zeitschrift der Universität Halle*, 39 (1990), 116–118.
3. Wolfgang Grassl and Barry Smith (Eds.), *Austrian Economics: Historical and Philosophical Background*, New York: New York University Press, London/Sydney: Croom Helm, 1986, x + 250pp. Reprint, London: Routledge, 2010.  
Reviews:  
A. W. Dnes, *Scottish Journal of Political Economy*, 33 (1986), 391–395.  
B. J. Loasby, *Economic Journal*, 96 (1986), 1165–1166.  
R. Ebeling, “The Roots of Austrian Economics”, *Market Process*, 5 (1987), 20–22, repr. in S. C. Littlechild, Ed., *Austrian Economics*, vol. 1, Aldershot/Brookfield VT: Edward Elgar, 38–40.  
J. Walker, *Journal of Economic Studies*, 14 (1987), 67–68.  
M. Rothbard, *Journal of Applied Philosophy*, 4 (1987), 248–250.  
J. A. Tucker, *Austrian Economics Newsletter*, (Fall 1988), 10–11.
4. Barry Smith (Ed.), *Foundations of Gestalt Theory*, Munich and Vienna: Philosophia, 1988, 495pp.  
Reviews:  
J. Schulte, *Lingua e Stile*, 23 (1988).  
V. Fano, “Gestalt e genesi precategoriale”, *Annali*, 9 (1988), 165–181.  
J. L. Gardies, *Revue philosophique de la France et de l’Etranger*, 179 (1989), 119.  
V. MuZoz-Delgado, *Estudios*, 46 (1990), 134–135.  
C. G. Allesch, *Conceptus* 24 (1990), 106–107.  
C. Porebski, *Philosophischer Literaturanzeiger*, 43 (1990), 176–178.  
D. Münch, *History and Philosophy of Logic*, 11 (1990), 238–240.  
C. G. Allesch, *Zeitschrift für klinische Psychopathologie und Psychotherapie*, 37 (1989), 476–477.

- J. M. Salanskis, “Le concept de Gestalt et la situation contemporaine de la philosophie des sciences”, *Les Etudes philosophiques*, 4 (1990), 519–536.
- J. Wolenski, *Ruch Filozoficzny*, 17 (1990), 162–164.
- E. and J. Dölling, *Deutsche Literaturzeitung*, 112 (1991), 189–192.
5. J. C. Nyíri and Barry Smith (Eds.), *Practical Knowledge: Outlines of a Theory of Traditions and Skills*, London/Sydney/New York: Croom Helm, 1988, ix + 213pp.
- Reviews:
- T. Whittock, *British Journal of Aesthetics*, 29 (1989), 191–192.
- F. Adams, *Canadian Philosophical Reviews*, 9, (1989), 283–285.
- J. M. Heaton, *Journal of the British Society for Phenomenology*, 21 (1990), 299–300.
- R. T. Allen, *Tradition and Discovery*, 17 (1990/91), 36–38.
6. Adolf Reinach, *Sämtliche Werke. Kritische Ausgabe mit Kommentar*, Band I: *Die Werke*, Teil I: *Kritische Neuausgabe (1905–1914)*, Teil II: *Nachgelassene Texte (1906–1917)*; Band II: *Kommentar und Textkritik*, Munich/Hamden/Vienna: Philosophia, 1989, critical edition with commentary by Karl Schuhmann and Barry Smith, 2 vols., xx + 848pp.
- Reviews:
- U. H. D., *Bibliographie de la Philosophie*, 36 (1989), 147.
- M. Crespo, *Diálogo Filosófico*, 6 (1990), 274.
- J. Seifert, *Prima Philosophia*, 3 (1990), 408–415.
- B. Waldenfels, *Philosophische Rundschau*, 37 (1990), 348.
- J. Machnac, *Zycie katolickie*, (1990), 147–150.
- V. Munoz Delgado, *Estudios*, 46 (1990), 161–162.
- J. Seifert, *Philosophischer Literaturanzeiger*, 44 (1991), 24–29.
- N. Duxbury, “Apriori Philosophy and Legal Ontology”, *Archiv für Rechts- und Sozialphilosophie*, 77 (1991), 262–266.
- P. Gorner, *Journal of the British Society for Phenomenology*, 25(3), (1994), 309–311.
7. Hans Burkhardt and Barry Smith (Eds.), *Handbook of Metaphysics and Ontology*, 2 vols., Munich/Philadelphia/Vienna: Philosophia, 1991, reprinted 2001, xxv + 1,005pp.
- Reviews:
- J. M. Perreault, *Choice*, (April 1992), 38–39.
- A. C. Grayling, *Times Literary Supplement*, (17 April 1992), 26.
- S. Scharnagl, *Bayernkurier*, (24 October 1992).
- Guillermo Hurtado, *Tópicos*, vol. II, núm. 3, (1992).
- O. R. Scholz, *Frankfurter Allgemeine Zeitung*, (15 September 1992).
- Roberto Poli, *History and Philosophy of Logic*, 24 (1992), 258–260.
- James DuBois, *Review of Metaphysics*, 47 (1993), 391–392.
- Roberto Poli, *Axiomathes*, 1 (1993), 140–142.
- John Haldane, *Philosophical Quarterly*, 43 (1993), 130.
- Michele Marsonet, *Epistemologia*, 16 (1993), 345–347.
- M. Moors, *Tijdschrift voor Filosofie*, 56 (1994), 161–162.
- Fran Mau, *Philosophischer Literaturanzeiger*, 47 (1994), 54–56.
- Timothy Joseph Day, *Minds and Machines*, 5 (1995), 131–134.
- Stanley Paulson, *Philosophical Books*, 44: 2 (2003), 135–153.
8. Barry Smith (Ed.), *Philosophy and Political Change in Eastern Europe* (The Monist Library of Philosophy), La Salle: The Hegeler Institute, 1993, vi + 192pp.
- Reviews:
- D. Cross, *Small Press*, (Winter 1994/95).
- A. R. Brunello, *Choice*, (December 1994).
- Nebojsa Kujundzic, *Dialogue*, 36 (1997), 648–650.
- T. Sunic, *CLIO*, 24 (1995), 440–443.
9. Barry Smith, *Austrian Philosophy: The Legacy of Franz Brentano*, La Salle and Chicago: Open Court, 1994, xiii + 381pp. Paperback edition: 1996.

## Reviews:

- Terry Skeats, *Library Journal*, 119 (1 September 1994), 185.
- J. Barker, *Choice*, 32 (March 1995), 1136.
- Ulf Höfer, *Nachrichten. Forschungsstelle und Dokumentationszentrum für Österreichische Philosophie*, 6 (1995), 55–58.
- Kurt R. Fischer, *Vienna Circle Institute Yearbook*, 3 (1995), 303–304.
- S. Gandon, “La philosophie autrichienne”, *Critique*, 51 (October 1995), 794–796.
- David Gordon, “Why the Austrian School is Austrian”, *The Mises Review*, 1:4 (1995), 18–21.
- Winfried Löffler, *Kontroversen in der Philosophie*, 8 (1995), 99–107.
- Susan Krantz, *Brentano Studien*, 6 (1995/96), 325–327.
- Richard Beach, *Canadian Philosophical Reviews*, 16 (1996), 62–64.
- Werner Diederich and Eva Picardi, *Erkenntnis*, 45 (1996), 123–127.
- Francis Dunlop, *Journal of the British Society for Phenomenology*, 27 (1996), 330–332.
- Sonja Rinofner-Kreidl, *Grazer Philosophische Studien*, 52 (1996/97), 191–220.
- Robin D. Rollinger, *Journal of the History of Philosophy*, 35 (1997), 314–315.
- Kelley, L. Ross, *The Proceedings of the Friesian School*, 4 (1998).
- Pierre Keller, *Modern Austrian Literature*, 29 (1996), 180–184.
- Gisela Kubon-Gilke, *Gestalt Theory* (1996), 157–158.
- Johannes Brandl, *Philosophy and Phenomenological Research*, 57 (1997), 697–702.
- Manuel Durand-Barthez, *Revue de Métaphysique et de Morale* (1999), 3, 427–428.
10. Barry Smith (Ed.), *European Philosophy and the American Academy* (The Monist Library of Philosophy), La Salle: The Hegeler Institute, 1994, viii + 226pp.
- Reviews:
- Barry Gross, *Academic Questions*, 8 (1995), 88–93.
- David C. Jacobs, *Teaching Philosophy*, 19 (1996), 306–310.
11. Barry Smith and David W. Smith (Eds.), *The Cambridge Companion to Husserl*, Cambridge and New York: Cambridge University Press, 1995, x + 519pp. Reprinted 1996.
- Reviews:
- Michel Bordeau, “Les nouveaux habits du Professeur Husserl”, *Critique*, 593 (1996), 893–907.
- Brice R. Wachterhauser, *Ethics* 107 (October 1996), 198.
- J. A. Bell, *Choice* 33 (February 1996), 961.
- P. Buckley, *Tijdschrift voor Filosofie*, 58 (1996), 768–769.
- Paul S. MacDonald, *Philosophical Writings*, 2 (1996), 109–110.
- R. P. Buckley, *Canadian Philosophical Reviews*, 16 (1996), 294–296.
- Michael Inwood, *International Philosophical Quarterly* 36/4 (1996), 490–493.
- Paul Gorner, *The Philosophical Quarterly*, 48 (1998), 419–422.
- Wojciech Zelaniec, *Brentano Studien*, 6 (1997), 334–339.
- M. J. Larrabee, *Philosophical Review*, 106 (1997), 283–286.
- Guillermo E. Rosado Haddock, “Edmund Husserl: A Philosopher for all Seasons?” *Modern Logic*, 7 (1997), 380–395.
- Jonathan Barnes, “Just a Swipe at Edmund”, *Dialectica*, 53: 2 (1999), 151–154.
12. Balázs Mezei and Barry Smith, *The Four Phases of Philosophy* (Studien zur österreichischen Philosophie), Amsterdam / Atlanta: Rodopi (with appendix: “The Four Phases of Philosophy” by Franz Brentano, translated from the German by Balázs Mezei and Barry Smith), 1999, iv + 122pp.
- Reviews:
- Wolfgang Huemer, *Philosophy in Review (Comptes rendus philosophiques)*, 20 (2000), 206–209.
13. Barry Smith (Ed.), *Liberal Education in a Knowledge Society*, Chicago and La Salle, IL: Open Court, 2002, x + 294 pp.
- Review:
- Ed Brandon, *Metapsychology*, Jan 19, 2004
14. Barry Smith (Ed.), *John Searle*, Cambridge and New York: Cambridge University Press, 2003, 312 pp.
- Reviews:
- Constantine Sandis, *Metapsychology*, 8 (4), 2004.

- Rodych, Victor. *Philosophy in Review (Comptes rendus philosophiques)*, 24(5), (2004), 365-367.
- Richard De Blacquièrre-Clarkson, *Philosophical Writings*, 26 (2004), 75-77.
- Briggs, Richard S. *Heythrop Journal: A Bimonthly Review of Philosophy and Theology*, 46(2), (2005), 270-272.
- P. Madigan “John Searle”, *Heythrop Journal: Quarterly Review of Philosophy and Theology* 47 (2), 2006, 335-337.
15. Aurel Kolnai, *On Disgust*, Barry Smith and Carolyn Korsmeyer (Eds.), Chicago: Open Court, 2003, viii + 120 pp.  
Review:  
Francis Raven, *Journal of Aesthetics and Art Criticism*, 2004, 62 (4): 408-409.
  16. Barry Smith, David Mark and Isaac Ehrlich (Eds.), *The Mystery of Capital and the Construction of Social Reality*, Chicago: Open Court, 2008, xxiv + 360 pp.  
Reviews:  
Wolfgang Grassl, *Journal of Markets and Morality*, 11(2), 2008, 343-345.  
Maksymilian Del Mar, *Dialectica*, 63(3), 2009, 365-368
  17. Katherine Munn and Barry Smith (Eds.), *Applied Ontology: An Introduction* (free download as e-book), Frankfurt/Lancaster: ontos/Walter de Gruyter, 2008, 342 pp.  
Reviews:  
Peter Simons, “Ontology Meets Ontologies: Philosophers as Healers”, *Metascience*, 18(3), 2009, 469-473.  
Joshua Gordon, *Education for Information*, 27(4), 2009, 231-234.  
Sanfilippo E. M., *Rivista Italiana di Filosofia Analitica Junior*, 2:2 (2011), 137-40.
  18. Ludger Jansen and Barry Smith (Eds.), *Biomedizinische Ontologie. Wissen strukturieren für den Informatik-Einsatz* (UTB Forum), Zurich: vdf, 2008, 252 pp. As e-book (revised): Zürich: vdf, 2011.
  19. Robert Arp, Barry Smith and Andrew Spear, *Building Ontologies with Basic Formal Ontology*, Cambridge, MA: MIT Press, August 2015, xxiv + 220pp.  
MIT Press Scholarship Online  
Review:  
Martin Frické, *Journal of the Association for Information Science and Technology*, in press.

## EDITED CONFERENCE PROCEEDINGS

1. Roberto Casati, Barry Smith and Graham White (Eds.), *Philosophy and the Cognitive Sciences*, Vienna: Hölder-Pichler-Tempsky 1994, viii + 682pp.
2. Berit Brogaard and Barry Smith (Eds.), *Rationality and Irrationality*, Vienna: öbv&hpt, 2001, 411 pp.
3. Christopher Welty and Barry Smith (Eds.), *Formal Ontology in Information Systems*, New York: ACM Press, 2001, xvi + 348 pp.
4. Pierre Grenon, Christopher Menzel and Barry Smith (Eds.), *Proceedings of the KI2003 Workshop on Reference Ontologies and Application Ontologies*, Hamburg, Germany, September 16, 2003. CEUR Workshop Proceedings 94.
5. Mitsuhiro Okada and Barry Smith, *Interdisciplinary Ontology. Proceedings of the First Interdisciplinary Ontology Meeting* (Tokyo, Japan, February 26-27, 2008), Tokyo: Keio University Press, 2008.
6. Mitsuhiro Okada and Barry Smith (Eds.), *Interdisciplinary Ontology. Proceedings of the Second Interdisciplinary Ontology Meeting* (Tokyo, Japan, February 28-March 1, 2009), Tokyo: Keio University Press, 2009, iv + 166 pp.
7. Barry Smith (Ed.) *ICBO 2009: Proceedings of the First International Conference on Biomedical Ontology* (Buffalo, NY, July 24-26, 2009). Buffalo: National Center for Ontological Research, 2009.
8. Barry Smith, Riichiro Mizoguchi and Sumio Nakagawa (Eds.), *Interdisciplinary Ontology. Proceedings of the Third Interdisciplinary Ontology Meeting* (Tokyo, Japan, February 27-28, 2010), Tokyo: Keio University Press, 2010.
9. Mitsuhiro Okada and Barry Smith (Eds.), *Interdisciplinary Ontology. Proceedings of the Fifth Interdisciplinary Ontology Meeting* (Tokyo, Japan, February 23-24, 2012), Tokyo: Keio University Press, 2012, iv + 159 pp.



## JOURNAL SPECIAL ISSUES

1. Barry Smith and Richard Scheuermann (Eds.), *Ontologies for Clinical and Translational Research* (Special issue of the *Journal of Biomedical Informatics*), Amsterdam: Elsevier, 2011, 176 pp.
2. Stefano Borgo, Riichiro Mizoguchi and Barry Smith (Eds.) *The Ontology of Functions* (Special issue of *Applied Ontology*), Amsterdam: IOS Press, 6 (2), 2011, 64 pp.
3. Andreas Tolk and Barry Smith (Eds.), *Command and Control Ontology* (Special issue of the *International Journal of Intelligent Defence Support Systems*), 4 (3), 2011, 98 pp.

## REFEREED ARTICLES IN SCHOLARLY JOURNALS

1. Barry Smith, “The Ontogenesis of Mathematical Objects”, *Journal of the British Society for Phenomenology*, 6 (1975), 91–101.
2. Barry Smith, “Frege and Husserl: The Ontology of Reference”, *Journal of the British Society for Phenomenology*, 9 (1978), 111–125.
3. Barry Smith, “An Essay in Formal Ontology”, *Grazer Philosophische Studien*, 6 (1978), 39–62.
4. Barry Smith, “Law and Eschatology in Wittgenstein’s Early Thought”, *Inquiry*, 21 (1978), 425–441.
5. Barry Smith, “Ingarden vs. Meinong on the Logic of Fiction”, *Philosophy and Phenomenological Research*, 16 (1980), 93–105. Polish translation as: “Ingarden versus Meinong o logice fikcji”, in Z. Muszyński (Ed.), *Z badań nad prawdą i poznaniem*, Lublin: Wydawnictwo UMC-S (1998), 283–296.
6. Barry Smith, “Logic, Form and Matter”, *Proceedings of the Aristotelian Society, Supplementary Volume 55* (1981), 47–63.
7. Barry Smith, “Oszták és magyar filozófia: Wittgenstein és Pauler logikájáról”, *Magyar Filozófiai Szemle* (1981), 139–144.
8. Barry Smith and Kevin Mulligan, “Framework for Formal Ontology”, *Topoi*, 3 (1983), 73–85.
9. Barry Smith, “Weininger und Wittgenstein”, in B. F. McGuinness and A. Gargani (Eds.), *Wittgenstein and Contemporary Philosophy* (*Teoria*, 5), Pisa: ETS (1984), 156–165. Romanian translation in *Revista de filosofie*, 49, (2002), 233–246.
10. Barry Smith, “Acta cum fundamentis in re”, *Dialectica*, 38 (1984), 157–178.
11. Barry Smith, “Ten Conditions on a Theory of Speech Acts”, *Theoretical Linguistics*, 11 (1984), 311–330.
12. Kevin Mulligan, Peter M. Simons and Barry Smith, “Truth-Makers”, *Philosophy and Phenomenological Research*, 44 (1984), 287–321. Reprinted in Jean-Maurice Monnoyer, *Metaphysics and Truthmakers*, Frankfurt/Lancaster/New Brunswick: Ontos, 9–50. Reprinted in E. J. Lowe and A. Rami (Eds.), *Truth and Truth-Making*, Chesham: Acumen (2009), 59–86. German translation as: “Wahrmacher”, in L. Bruno Puntel (Ed.), *Der Wahrheitsbegriff. Neue Explikationsversuche* (a collection of readings on modern theories of truth), Darmstadt: Wissenschaftliche Buchgesellschaft (1987), 210–255. French translation as “Vérificateurs”, *Études de philosophie*, no. 9–10, 2008–2011 (published August 2011), translated by B. Langlet and J.-F. Rosecchi, 104–138.
13. Barry Smith, “De la modification du sentiment: l’esthétique de l’Ecole de Graz”, *Revue d’Esthétique*, 9 (1985), 19–37.
14. Barry Smith, “Ontologische Aspekte der Husserlschen Phänomenologie”, *Husserl Studies*, 3 (1986), 115–130.
15. Barry Smith, “The Substitution Theory of Art”, *Grazer Philosophische Studien*, 25/26 (1986), 533–557. Italian translation as: “La teoria sostituzionale dell’arte”, in E. Pulcini (Ed.), *Teorie delle passioni* (Supplementi di Topoi), 3 (1989), 186–209.
16. Kevin Mulligan and Barry Smith, “A Relational Theory of the Act”, *Topoi*, 5/2 (1986), 115–130.
17. Kevin Mulligan and Barry Smith, “Husserl’s Logical Investigations”, *Grazer Philosophische Studien*, 27 (1986), 199–207.
18. Kevin Mulligan and Barry Smith, “A Husserlian Theory of Indexicality”, in *Grazer Philosophische Studien*, 28 (1986), 133–163.
19. Barry Smith, “The Substance of Brentano’s Ontology”, *Topoi*, 6/1 (1987), 39–49.

20. Barry Smith, "The Ontology of Epistemology", *Reports on Philosophy*, 11 (1987), 57–66.  
Polish translation as: "Ontologia epistemologii", in W. Strozewski and A. Wegrzecki (Eds.), *W Kregu Filozofii Romana Ingardena*, Warsaw/Cracow: PWN, 1995, 111–119.
21. Barry Smith, "Zalai Béla és a tiszta lét Metafizikája", *Magyar Filozófiai Szemle* (1987/3), 584–593.  
German version: "Bela Zalai und die Metaphysik des reinen Seins", *Brentano Studien*, 5 (1994), 59–68.
22. Karl Schuhmann and Barry Smith, "Questions: An Essay in Daubertian Phenomenology", *Philosophy and Phenomenological Research*, 47 (1987), 353–384.
23. Barry Smith, "The Soul and Its Parts: A Study in Aristotle and Brentano", *Brentano-Studien*, 1 (1988), 75–88.
24. Barry Smith, "The Primacy of Place: An Investigation in Brentanian Ontology", *Topoi*, 8 (1989), 43–51.
25. Barry Smith, "Logic and the *Sachverhalt*", *The Monist*, 72 (1989), 52–69.  
Revised version in: L. Albertazzi, M. Libardi and R. Poli (Eds.), *The School of Franz Brentano*, Dordrecht/Boston/Lancaster: Kluwer (1996), 323–341.  
Italian translation as: "Dalla psicologia del giudizio all'ontologia dello stato di cose" in *Discipline Filosofiche*, 7: 2 (1997), 7–28.
26. Barry Smith, "On the Origins of Analytic Philosophy", *Grazer Philosophische Studien*, 35 (1989), 153–173.
27. Barry Smith, "Aristotle, Menger, Mises: An Essay in the Metaphysics of Economics", *History of Political Economy*, Annual Supplement to vol. 22 (1990), published simultaneously as B. Caldwell (Ed.), *Carl Menger and His Economic Legacy*, Durham and London: Duke University Press, 1990, 263–288.  
Reprinted in: E. Younkins (Ed.), *Philosophers of Capitalism: Menger, Mises, Rand, and Beyond*, New York: Lexington Books, 2005, 199–222.
28. Karl Schuhmann and Barry Smith, "Elements of Speech Act Theory in the Work of Thomas Reid", *History of Philosophy Quarterly*, 7 (1990), 47–66.
29. Barry Smith, "Textual Deference", *American Philosophical Quarterly*, 28 (1991), 1–13.  
Danish translation as: "Textlig Ærbødighed", *Kritik*, 116 (1995), 89–99.  
Italian translation as: "Deferenza testuale", *Divus Thomas*, 24/3 (1999), 92–116.  
Russian translation as: "Проблема перевода", *Logos* 5 (2000), 124–139.
30. Barry Smith, "German Philosophy: Language and Style", *Topoi*, 10 (1991), 155–161.
31. Barry Smith, "La verità trionfa: Da T. G. Masaryk a Jan Patočka", *Discipline Filosofiche*, 2 (1991), 207–227.  
German version as: "Von T. G. Masaryk bis Jan Patočka. Eine philosophische Skizze", in J. Zumr and T. Binder (Eds.), *T. G. Masaryk und die Brentano-Schule*, Graz/Prague: Czech Academy of Sciences (1993), 94–110.
32. Karl Schuhmann and Barry Smith, "Neo-Kantianism and Phenomenology: The Case of Emil Lask and Johannes Daubert", *Kant-Studien*, 82 (1991), 303–318.
33. Barry Smith, "Zum Wesen des Common Sense: Aristoteles und die naive Physik", *Zeitschrift für philosophische Forschung*, 46 (1992), 508–525.  
Revised version as: "Räumliche Entitäten: Örter, Löcher, Grenzen", in L. Jansen and B. Smith (Eds.), *Die biomedizinische Ontologie. Philosophie – Lebenswissenschaften – Informationstechnik* (UTB Forum), Zurich: vdf, 2008, 113–126.
34. Barry Smith, "The Soul and Its Parts, II: Varieties of Inexistence", *Brentano-Studien*, 4 (1992/93), 35–51.  
Romanian translation in: *Revista de Filosofie*, 49(3-4), (2002), 233–246.
35. Barry Smith, "Putting the World Back into Semantics", *Grazer Philosophische Studien*, 44 (1993), 91–109.  
Reprinted in Peer F. Bundgaard and Frederik Stjernfelt (Eds.), *Semiotics* (Critical Concepts in Linguistics Series), London: Routledge (2010).  
Russian translation in: *Ophyr*, n.d.
36. Barry Smith, "An Essay on Material Necessity", P. Hanson and B. Hunter (Eds.), *Return of the A Priori* (*Canadian Journal of Philosophy*, Supplementary Volume 18), (1993), 301–322.
37. Karl Schuhmann and Barry Smith, "Two Idealisms: Lask and Husserl", *Kant-Studien*, 83 (1993), 448–466.  
Polish translation as: "Dwa oblicza idealizmu: Lask a Husserl", in A. J. Norasa and D. Kuboka (Eds.), *Miedzy kantyzmem a neokantyzmem*, Katowice: Wydawnictwo Uniwersytetu Śląskiego (2002), 130–156.

38. Barry Smith and Roberto Casati, “Naive Physics: An Essay in Ontology”, *Philosophical Psychology*, 7/2 (1994), 225–244.  
French version: “La physique naïve: un essai d’ontologie”, *Intellectica*, 17 (1993), 173–197.  
Belorussian translation  
Polish translation
39. Barry Smith, “Zur Kognition räumlicher Grenzen: Eine mereotopologische Untersuchung”, *Kognitionswissenschaft*, 4 (1995), 177–184.
40. Barry Smith, “Formal Ontology, Common Sense, and Cognitive Science”, *International Journal of Human-Computer Studies*, 43 (1995), 641–667.  
Condensed version in: *AI\*IA Notizie. Periodico dell’Associazione Italiana per l’Intelligenza Artificiale*, 7 (1994), 11–18.  
Italian translation as: “L’ontologia del senso commune”, in E. Agazzi (Ed.), *Valore e Limiti del Senso Comune*, Milan: FrancoAngeli (2004), 261–284.
41. Barry Smith, “More Things in Heaven and Earth”, *Grazer Philosophische Studien*, 50 (1995), 187–201.
42. Barry Smith, “The Structures of the Commonsense World”, *Acta Philosophica Fennica*, 58 (1995), 290–317.  
Preprinted in: S. Poggi (Ed.), *Gestalt Psychology. Its Origins, Foundations and Influence*, Florence: Olschky (1994), 209–232.  
Italian translation as: “Le strutture del mondo del senso commune”, in *Iride* (Florence), 9 (1992), 22–44. Partially reprinted as “Ontologia ecologia” in M. Ferraris (Ed.), *Ontologia*, Naples: Guida (2003), 146–151.  
German translation as: “Die Struktur der Common-Sense Welt”, *Logos*, N. F. 1 (1994), 422–449.  
Russian translation
43. Barry Smith, “Mereotopology: A Theory of Parts and Boundaries”, *Data and Knowledge Engineering*, 20 (1996), 287–303.
44. Barry Smith, “On Substances, Accidents and Universals: In Defence of a Constituent Ontology”, *Philosophical Papers*, 26 (1997), 105–127.  
Russian translation
45. Barry Smith, “Ontologie des Mesokosmos: Soziale Objekte und Umwelten”, *Zeitschrift für philosophische Forschung*, 52 (1998), 521–540.
46. Barry Smith, “Boundaries: A Brentanian Theory”, *Brentano-Studien* 8 (1998/99), 107–114.  
Revised version as: “Zeno’s Paradox for Colors”, in Robert Dostal, Lester Embree, Joseph J. Kockelmans, J. N. Mohanty, and Olav K. Wiegand (Eds.), *Phenomenology of German Idealism, Hermeneutics, and Logic*, Dordrecht: Kluwer (2000), 201–207.
47. Barry Smith, “Truthmaker Realism”, *Australasian Journal of Philosophy*, 77 (3) (1999), 274–291.
48. Barry Smith and Achille Varzi, “The Niche”, *Nous*, 33:2 (1999), 198–222.  
Extended abstract published as: “Mereology, Topology, Ecology: A Formal Theory of Organism-Niche Relations”, in J. Cachro and K. Kijania-Placek (Eds.), *11th International Congress of Logic, Methodology and Philosophy of Science. Volume of Abstracts*, Cracow: Jagiellonian University (1999), p. 351.  
Polish translation as: “Nisza,” *Filozofia Nauki*, 8: 3/4 (2000), 5–30.
49. Barry Smith and David Mark, “Ontology with Human Subjects Testing: An Empirical Investigation of Geographic Categories”, *American Journal of Economics and Sociology*, 58: 2 (April 1999), 245–272.
50. Barry Smith and Achille Varzi, “Fiat and Bona Fide Boundaries”, *Philosophy and Phenomenological Research*, 60: 2 (March 2000), 401–420.  
Revised version of Barry Smith and Achille Varzi, “The Formal Ontology of Boundaries”, *Electronic Journal of Analytic Philosophy*, 5: 5 (1997).  
Russian translation in: *Ophyr*, n.d.
51. Barry Smith, “Les objets sociaux,” *Philosophiques*, 26/2 (1999), 315–347.  
English version  
Russian version
52. Werner Ceusters, Ignace Desimpel, Barry Smith and Stefan Schulz, “Using Cross-Lingual Information to Cope with Underspecification in Formal Ontologies”, *Studies in Health Technology and Informatics*, 95 (2003), 391–396.
53. Barry Smith and John Searle, “The Construction of Social Reality: An Exchange”, *American Journal of Economics and Sociology*, 62: 2 (2003), 285–309.  
Reprinted in Laurence S. Moss and David Koepsell (Eds.), *John Searle’s Ideas about Social Reality: Extensions, Criticisms, and*

*Reconstructions*, Oxford: Wiley-Blackwell (2003).

French translation as: “L’ontologie de la réalité sociale”, in P. Livet and R. Ogien (Eds.), *L’Enquête ontologique, du mode de l’existence des objets sociaux*, Paris: Editions EHESS (2000), 185–208.

Russian translation

54. Barry Smith, “Philosophie, Politik und wissenschaftliche Weltauffassung: Zur Frage der Philosophie in Österreich und Deutschland”, *Grazer Philosophische Studien* 58/59 (2000), 241–262.
55. Barry Smith, “The Chinese Rune Argument”, *Philosophical Explorations*, 4 (2), 2001, 70–75, with Searle’s response, 75–77.
56. Barry Smith and Berit Brogaard, “Living High and Letting Die”, *Philosophy*, 76 (2001), 435–442 (published under the pseudonym Nicola Bourbaki).
57. Barry Smith and David M. Mark, “Geographical Categories: An Ontological Investigation”, *International Journal of Geographical Information Science*, 15: 7 (2001), 591–612.  
Reprinted in: Peter Fisher (Ed.), *Classics from the International Journal of Geographical Information Science*, London: Taylor and Francis, 2006, 481–506.
58. Barry Smith, “Fiat Objects”, *Topoi*, 20: 2 (September 2001), 131–148.  
Italian translation as: “Oggetti Fiat”, *Rivista di Estetica*, 20/2 (2002), 58–87.
59. Barry Smith and Leonardo Zaibert, “The Metaphysics of Real Estate”, *Topoi*, 20: 2 (September 2001), 161–172.
60. Barry Smith, “Husserlian Ecology” (in Japanese), *Human Ontology* (Kyoto), 7 (2001), 9–24.  
Japanese translation, 25–41.
61. Barry Smith, “Truthmaker Realism: Response to Gregory”, *Australasian Journal of Philosophy*, 80 (2) (2002), 231–234.
62. Barry Smith and Achille Varzi, “Surrounding Space: The Ontology of Organism-Environment Relations”, *Theory in Biosciences*, 121 (2002), 139–162.
63. Barry Smith and Berit Brogaard, “Quantum Mereotopology”, *Annals of Mathematics and Artificial Intelligence*, 35/1–2 (2002), 153–175.  
Shorter version in: *Spatial and Temporal Granularity. Papers from the AAAI Workshop* (AAAI Technical Report WS-00-08), Menlo Park: AAAI Press (2000), 25–31.
64. Barry Smith and Berit Brogaard, “A Unified Theory of Truth and Reference”, *Logique et Analyse*, No. 169-170 (2000, published 2003), 49–93.  
French translation: “Une théorie unifiée de la vérité et de la référence” in J. M. Monnoyer (Ed.), *La Structure du Monde: Objets, Propriétés, États du choses*, Paris: Vrin (2004), 141–184.  
Russian translation
65. Barry Smith and David M. Mark, “Do Mountains Exist? Towards an Ontology of Landforms”, *Environment and Planning B (Planning and Design)*, 30(3) (2003), 411–427.
66. Barry Smith and Berit Brogaard, “Sixteen Days”, *The Journal of Medicine and Philosophy*, 28 (2003), 45–78.  
German translation as: “Sechzehn Tage: Wann beginnt ein menschliches Leben?”, in G. Imaguire and Christine Schneider (Eds.), *Untersuchungen zur Ontologie*, Munich: Philosophia, 2006, 3–40.  
Revised version as “Die Ontologie des Embryos”, in L. Jansen and B. Smith (Eds.), *Biomedizinische Ontologie. Philosophie – Lebenswissenschaften - Informationstechnik* (UTB Forum), Zurich: vdf, 2008, 199–228.
67. Thomas Bittner and Barry Smith “Vague Reference and Approximating Judgements”, *Spatial Cognition and Computation*, 3: 2 (2003), 137–156.  
Russian translation
68. Pierre Grenon and Barry Smith, “SNAP and SPAN: Towards Dynamic Spatial Ontology”, *Spatial Cognition and Computation*, 4: 1 (March 2004), 69–103.
69. Barry Smith and Anand Kumar, “Controlled Vocabularies in Bioinformatics: A Case Study in the Gene Ontology”, *BIOSILICO: Drug Discovery Today*, 2 (2004), 246–252.
70. Thomas Bittner, Maureen Donnelly and Barry Smith, “Endurants and Perdurants in Directly Depicting Ontologies”, *AI Communications*, 13: 4 (2004), 247–258.

71. Jean-Luc Vershelde, Mariana Casella Dos Santos, Tom Deray, Barry Smith and Werner Ceusters, “Ontology-Assisted Database Integration to Support Natural Language Processing and Biomedical Data-Mining”, in: R. Hofestädt (Ed.), *Journal of Integrative Bioinformatics*, 1 (2004), 1-10. Repr. in: *Yearbook of Bioinformatics* (2004), 39–48.
72. Barry Smith and Pierre Grenon, “The Cornucopia of Formal-Ontological Relations”, *Dialectica* 58: 3 (2004), 279–296.
73. Anand Kumar, Barry Smith and Daniel Novotny, “Biomedical Informatics and Granularity”, *Comparative and Functional Genomics*, 5 (2004), 501–508. PMC2447428
74. Barry Smith and Bert R. E. Klagges, “Philosophie und biomedizinische Forschung”, *Allgemeine Zeitschrift für Philosophie*, 30: 1 (2005), 5–26.  
Revised version in L. Jansen and B. Smith (Eds.), *Biomedizinische Ontologie. Philosophie – Lebenswissenschaften - Informationstechnik* (UTB Forum), Zurich: vdf, 2008, 17-30.  
English version as “Bioinformatics and Philosophy”, in K. Munn and B. Smith (Eds.), *Applied Ontology: An Introduction*, Frankfurt/Lancaster: ontos, 2008, 17-30.
75. Barry Smith, Werner Ceusters, Bert Klagges, Jacob Köhler, Anand Kumar, Jane Lomax, Chris Mungall, Fabian Neuhaus, Alan Rector and Cornelius Rosse, “Relations in Biomedical Ontologies”, *Genome Biology* (2005), 6 (5), R46. PMC1175958
76. Werner Ceusters, Barry Smith and Louis Goldberg, “A Terminological and Ontological Analysis of the NCI Thesaurus”, *Methods of Information in Medicine*, 44 (2005), 498–507.
77. Barry Smith, Werner Ceusters, Anand Kumar and Cornelius Rosse, “On Carcinomas and Other Pathological Entities”, *Comparative and Functional Genomics*, vol. 6, issue 7/8, 2005, 379–387. PMC2447494
78. Berit Brogaard and Barry Smith, “On Luck, Responsibility and the Meaning of Life”, *Philosophical Papers*, 34(3), 2005, 443–458.
79. Ingvar Johansson, Barry Smith, Katherine Munn, Nikoloz Tsikolia, Kathleen Elsner, Dominikus Ernst, and Dirk Siebert, “Functional Anatomy: A Taxonomic Proposal”, *Acta Biotheoretica*, 53(3), 2005, 153–166.
80. Jonathan Simon, James Fielding and Barry Smith, “Formal Ontology for Natural Language Processing and the Integration of Biomedical Databases”, *International Journal of Medical Informatics*, 75 (3-4), 2006, 224-231.
81. Anand Kumar, Barry Smith, Domenica Pisanelli, Aldo Gangemi and Mario Stefanelli, “Clinical Guidelines as Plans: An Ontological Theory”, *Methods of Information in Medicine*, 45 (2), 2006, 204-210.
82. Anand Kumar, Yum Lina Yip, Barry Smith and Pierre Grenon, “Bridging the Gap between Medical and Bioinformatics: An Ontological Case Study in Colon Carcinoma”, *Computers in Biology and Medicine* 2006; 36, (7-8): 694-711.
83. Barry Smith, “From Concepts to Clinical Reality: An Essay on the Benchmarking of Biomedical Terminologies”, *Journal of Biomedical Informatics*, 2006; 39(3): 288-298.  
Revised version as “New Desiderata for Biomedical Terminologies”, in K. Munn and B. Smith (Eds.), *Applied Ontology: An Introduction*, Frankfurt/Lancaster: ontos, 2008, 83-109.
84. Christiane Fellbaum, Udo Hahn and Barry Smith, “Towards New Information Resources for Public Health – From WordNet to Medical WordNet”, *Journal of Biomedical Informatics*, 2006; 39(3): 321-332.
85. Werner Ceusters and Barry Smith, “Strategies for Referent Tracking in Electronic Health Records”, *Journal of Biomedical Informatics*, 2006; 39(3): 362-378.
86. Rubin DL, Lewis SE, Mungall CJ, Misra S, Westerfield M, Ashburner M, Sim I, Chute CG, Solbrig H, Storey MA, Smith B, Richter JD, Noy NF and Musen MA, “National Center for Biomedical Ontology: Advancing Biomedicine through Structured Organization of Scientific Knowledge”, *Omics: A Journal of Integrative Biology*, 10(2), 2006, 185-198.
87. Patricia L. Whetzel, Ryan R. Brinkman, Helen C. Causton, Liju Fan, Jennifer Fostel, Gilberto Fragoso, Mervi Heiskanen, Tina Hernandez-Boussard, Norman Morrison, Helen Parkinson, Philippe Rocca-Serra, Susanna-Assunta Sansone, Daniel Schober, Barry Smith, Robert Stevens, Chris Stoeckert, Chris Taylor, Joe White, “Development of FuGO – An Ontology for Functional Genomics Experiments”, *Omics: A Journal of Integrative Biology*, 10(2), 2006, 199-204. PMC2783628
88. Jacob Köhler, Katherine Munn, Alexander Rüegg, Andre Skusa, Barry Smith, “Quality Control for Terms and Definitions in Ontologies and Taxonomies”, *BMC Bioinformatics*, 2006, 7: 212, PMC1482721
89. Kevin Mulligan, Peter Simons and Barry Smith, “What’s Wrong with Contemporary Philosophy?”, *Topoi*, 25 (1-2), 2006, 63-67.  
Finnish translation as “Mikä nykyfilosofiassa on vialla?” in: *niin & näin*, 1 (2014), 69-74 (published with commentary by Tuomas E.

- Tahko (76-78), Pauliina Remes (80-82) and Susanna Lindberg (85-90).  
Portuguese translation as “Ce se întâmplă cu filosofia contemporană?”, *Rivista de filosofie*, 62 (6), 2015, 759-765.
90. Leo Obrst, Patrick Cassidy, Steve Ray, Barry Smith, Dagobert Soergel, Matthew West and Peter Yim, “The 2006 Upper Ontology Summit Joint Communiqué”, *Applied Ontology*, 1 (2), 2006, 203-211.
  91. Olivier Bodenreider, Barry Smith, Anand Kumar, Anita Burgun, “Investigating Subsumption in SNOMED CT: An Exploration into Large Description Logic-Based Biomedical Terminologies”, *Artificial Intelligence in Medicine*, 2007, 39, 183-195. PMC2442845
  92. Werner Ceusters and Barry Smith, “Referent Tracking for Treatment Optimisation in Schizophrenic Patients: A Case Study in Applying Philosophical Ontology to Diagnostic Algorithms”, *Journal of Web Semantics*, 2006; (4)3, 229-236. PMC203705415  
Long version with supplementary data.
  93. Werner Ceusters and Barry Smith “Referent Tracking for Digital Rights Management,” *International Journal of Metadata, Semantics and Ontologies*, 2(1), 2007, 45-53.
  94. Werner Ceusters, Peter Elkin and Barry Smith, “Negative Findings in Electronic Health Records and Biomedical Ontologies: A Realist Approach”, *International Journal of Medical Informatics* 2007; 76: 326-333. PMC2211452.
  95. Barry Smith, Michael Ashburner, Cornelius Rosse, Jonathan Bard, William Bug, Werner Ceusters, Louis J. Goldberg, Karen Eilbeck, Amelia Ireland, Christopher J Mungall, The OBI Consortium, Neocles Leontis, Philippe Rocca-Serra, Alan Ruttenberg, Susanna-Assunta Sansone, Richard H Scheuermann, Nigam Shah, Patricia L. Whetzel, Suzanna Lewis, “The OBO Foundry: Coordinated Evolution of Ontologies to Support Biomedical Data Integration”, *Nature Biotechnology*, 25 (11), November 2007, 1251-1255. PMC2814061
  96. Darren A. Natale, Cecilia N. Arighi, Winona Barker, Judith Blake, Ti-Cheng Chang, Zhangzhi Hu, Hongfang Liu, Barry Smith, and Cathy H. Wu, “Framework for a Protein Ontology”, *BMC Bioinformatics*, Nov. 2007, 8(Suppl. 9): S1. PMC2217659
  97. Chris F Taylor, Dawn Field, Susanna-Assunta Sansone, Rolf Apweiler, Michael Ashburner, Catherine A Ball, Pierre-Alain Binz, Alvis Brazma, Ryan Brinkman, Eric W Deutsch, Oliver Fiehn, Jennifer Fostel, Peter Ghazal, Graeme Grimes, Nigel W Hardy, Henning Hermjakob, Randall K Julian, Jr., Matthew Kane, Eugene Kolker, Martin Kuiper, Nicholas Le Novère, Jim Leebens-Mack, Suzanna E Lewis, Ruth McNally, Alexander Mehrle, Norman Morrison, John Quackenbush, Donald G Robertson, Philippe Rocca-Serra, Barry Smith, Jason Snape, Peter Sterk, Stefan Wiemann, “Promoting Coherent Minimum Reporting Requirements for Biological and Biomedical Investigations: The MIBBI Project”, *Nature Biotechnology*, 26 (2008), 889-896. PMC2771753
  98. David P. Hill, Barry Smith, Monica S. McAndrews-Hill, Judith A. Blake, “Gene Ontology Annotations: What they mean and where they come from”, *BMC Bioinformatics*, 2008; 9(Suppl 5): S2. PMC2367625
  99. David Koepsell, Robert Arp, Jennifer Fostel and Barry Smith, “Creating a Controlled Vocabulary for the Ethics of Human Research: Towards a Biomedical Ethics Ontology”, *Journal of Empirical Research on Human Research Ethics*, Vol. 4, No. 1, 2009, 43-58. PMC2725426
  100. Thomas Bittner, Maureen Donnelly and Barry Smith, “A Spatio-Temporal Ontology for Geographic Information Integration”, *International Journal for Geographical Information Science*, 23 (6), 2009, 765-798.
  101. Daniel Schober, Barry Smith, Suzanna E Lewis, Waclaw Kusnierczyk, Jane Lomax, Chris Mungall, Chris F Taylor, Philippe Rocca-Serra and Susanna-Assunta Sansone, “Survey-based naming conventions for use in OBO Foundry ontology development”, *BMC Bioinformatics*, 2009 (June), 10:125. PMC2684543
  102. Cecilia Arighi, Hongfang Liu, Darren Natale, Winona Barker, Harold Drabkin, Zhangzhi Hu, Judith Blake, Barry Smith and Cathy Wu, “TGF-beta Signaling Proteins and the Protein Ontology”, *BMC Bioinformatics*, 10: Art. No. S3 Suppl. 5, May 16 2009. PMC2679403
  103. Anna M. Masci, Cecilia N. Arighi, Alexander D. Diehl, Anne E. Lieberman, Chris Mungall, Richard H. Scheuermann, Barry Smith and Lindsay G. Cowell, “An improved ontological representation of dendritic cells as a paradigm for all cell types”, *BMC Bioinformatics*, February 2009, 10:70. PMC2662812
  104. Barry Smith, “Toward a Realistic Science of Environments”, *Ecological Psychology*, 2009, 21 (2), April-June, 121-130.
  105. Holger Stenzhorn, Stefan Schulz, Martin Boeker and Barry Smith, “Adapting Clinical Ontologies in Real-World Environments”, *Journal of Universal Computer Science*, 14 (22), 2009, 3767-3780. PMC2853050
  106. Stefan Schulz, Holger Stenzhorn, Martin Boekers and Barry Smith, “Strengths and Limitations of Formal Ontologies in the Biomedical Domain”, *Electronic Journal of Communication, Information and Innovation in Health* (Special Issue on Ontologies,

- Semantic Web and Health), 3 (1), 2009, 31-45. PMC2904529  
 Portuguese translation as “Vantagens e limitações das ontologias formais na área biomedical”, *Reciis: Revista Electronica de Comunicacao Informacao, Inovacao em Saude*, March 2009, March 2009, Vol. 3, N 1, 33-48.
107. Gunnar O. Klein and Barry Smith, “Concept Systems and Ontologies: Recommendations for Basic Terminology”, *Transactions of the Japanese Society for Artificial Intelligence*, 25, 2010, 433-441. PMC3034144.  
 Japanese translation in *Journal of the Japanese Society for Artificial Intelligence*, 25 (3), 2010, 317-325.
  108. David R. Karp, Nishanth Marthandan, Steven G. E. Marsh, Chul Ahn, Frank C. Arnett, Lindsay Cowell, David S. DeLuca, Alexander D. Diehl, Raymond Dunivin, Karen Eilbeck, Michael Feolo, Paula A. Guidry, Wolfgang Helmberg, Suzanna Lewis, Maureen D. Mayes, Chris Mungall, Darren A. Natale, Bjoern Peters, Effie Petersdorf, John D. Reveille, Barry Smith, Glenys Thomson, Matthew J. Waller, Richard H. Scheuermann, “Novel Sequence Feature Variant Type Analysis of the HLA Genetic Association in Systemic Sclerosis”, *Human Molecular Genetics*, 2010 Feb 15;19(4):707-19. PMC2807365
  109. Barry Smith and Mathias Brochhausen, “Putting Biomedical Ontologies to Work”, *Methods of Information in Medicine*, 49 (2), 135-40. (Published September 2010) PMC3116518  
 German version as “Biomedizinische Ontologien für die Praxis”, *European Journal for Biomedical Informatics*, 1 (2009).
  110. Jiye Ai, Barry Smith, and David Wong (2010) “Saliva Ontology: An ontology-based framework for a Salivaomics Knowledge Base”, *BMC Bioinformatics*, 11:302. PMC2898059
  111. Barry Smith and Werner Ceusters, “Ontological Realism as a Methodology for Coordinated Evolution of Scientific Ontologies”, *Applied Ontology*, 5 (2010), 139–188. PMC3104413
  112. Albert Goldfain, Barry Smith and Lindsay G. Cowell, “Towards an Ontological Representation of Resistance: The Case of MRSA”, *Journal of Biomedical Informatics*, 2011 (Feb.), 44:1, 35-41. PMC2930208.
  113. Pierre Grenon and Barry Smith, “Foundations of an Ontology of Philosophy”, *Synthese*, 2011, 182 (2), 185-204.  
 Preprint version
  114. Werner Ceusters and Barry Smith, “Foundations for a Realist Ontology of Mental Disease”, *Journal of Biomedical Semantics*, 2010, 1:10, 1-23. PMC3017014
  115. Werner Ceusters, Maria Capolupo, Georges De Moor, Jos Devlies, Barry Smith, “An Evolutionary Approach to Realism-Based Adverse Event Representations”, *Methods of Information in Medicine*, 50 (1): 62-73, 2011. PMC2829617
  116. Darren A. Natale, Cecilia N. Arighi, Winona C. Barker, Judith A. Blake, Carol J. Bult, Michael Caudy, Harold J. Drabkin, Peter D’Eustachio, Alexei V. Evsikov, Hongzhan Huang, Jules Nchoutmboube, Natalia V. Roberts, Barry Smith, Jian Zhang, Cathy H. Wu, “The Protein Ontology: A Structured Representation of Protein Forms and Complexes”, *Nucleic Acids Research* 2011, 39 (Database Issue), D539-545. PMC3013777
  117. Carol J. Bult, Harold Drabkin, Alexei Evsikov, Darren Natale, Cecilia Arighi, Natalia Roberts, Alan Ruttenberg, Peter D’Eustachio, Barry Smith, Judith A. Blake, Cathy Wu, “The Representation of Protein Complexes in the Protein Ontology (PRO)”, *BMC Bioinformatics*, September 2011, 12:371. PMC3189193
  118. Mark A. Musen, Natalya F. Noy, Nigam H. Shah, Patricia L. Whetzel, Christopher G. Chute, Margaret-Anne Story, Barry Smith, and the NCBO team, “The National Center for Biomedical Ontology”, *Journal of the American Medical Informatics Association*, 19 (2), 2012, 190-195. PMC3277625
  119. Barry Smith, “How to Do Things with Documents”, *Rivista di Estetica*, 50 (2012), 179-198.
  120. Jiye Ai, Barry Smith and David Wong, “Bioinformatics Advances in Saliva Diagnostics”, *International Journal of Oral Science*, (2012) 4, 85–87. PMC3412667
  120. Ramona L. Walls, Balaji Athreya, Laurel Cooper, Justin Elser, Maria A. Gandolfo, Pankaj Jaiswal, Christopher J. Mungall, Justin Preece, Stefan A. Rensing, Barry Smith, Dennis W. Stevenson, “Ontologies as Integrative Tools for Plant Science”, *American Journal of Botany*, 99(8): 1–13, 2012. PMC3492881
  121. Barry Smith, “Classifying Processes: An Essay in Applied Ontology”, *Ratio*, 25:4 (2012), 463-488. PMC 3718480  
 Reprinted in D. Oderberg (Ed.), *Classifying Reality*, Oxford: Wiley-Blackwell, 2013, 101-126.
  122. Barry Smith, Tatiana Malyuta, David Salmen, William Mandrick, Kesny Parent, Shouvik Bardhan, Jamie Johnson, “Ontology for the Intelligence Analyst”, *CrossTalk: The Journal of Defense Software Engineering*, November/December 2012, 18-25.

123. Laurel Cooper, Ramona L. Walls, Justin Elser, Maria A. Gandolfo, Dennis W. Stevenson, Barry Smith, Justin Preece, Balaji Athreya, Christopher J. Mungall, Stefan Rensing, Manuel Hiss, Daniel Lang, Ralf Reski, Tanya Z. Berardini, Donghui Li, Eva Huala, Mary Schaeffer, Naama Menda, Elizabeth Arnaud, Rosemary Shrestha, Yukiko Yamazaki, Pankaj Jaiswal, “The Plant Ontology as a Tool for Comparative Plant Anatomy and Genomic Analyses”, *Plant and Cell Physiology*, 54 (2) (Database Issue), Feb. 2013, 1-23 (PMC3583023)
124. Darren A. Natale, Cecilia N. Arighi, Judith A. Blake, Carol J. Bult, Karen R. Christie, Julie Cowart, Peter D’Eustachio, Alexander D. Diehl, Harold J. Drabkin, Olivia Helfer, Hongzhan Huang, Anna Maria Masci, Jia Ren, Natalia V. Roberts, Karen Ross, Alan Ruttenberg, Veronica Shamovsky, Barry Smith, Meher Shruti Yerramalla, Jian Zhang, Aisha AlJanahi, Irem Celen, Cynthia Gan, Mengxi Lv, Emily Schuster-Lezell, Cathy H. Wu, “Protein Ontology: a controlled structured network of protein entities”, *Nucleic Acids Research*, 2013, 42(1): D415-21.
125. Pier Luigi Buttigieg, Norman Morrison, Barry Smith, Christopher J Mungall, Suzanna E Lewis and the ENVO Consortium, “The Environment Ontology: Contextualizing Biological and Biomedical Entities”, *Journal of Biomedical Semantics* 2013, 4:43.
126. Mark Jensen, Alexander P. Cox, Naveed Chaudhry, Marcus Ng, Donat Sule, William Duncan, Patrick Ray, Bianca Weinstock-Guttman, Barry Smith, Alan Ruttenberg, Kinga Szigeti, Alexander D. Diehl, “The Neurological Disease Ontology”, *Journal of Biomedical Semantics*, 2013, 4:42.
127. Schiffman E., Ohrbach R., Truelove E., Look J., Anderson G., Goulet J.-P., List T., Svensson P., Gonzalez Y., Lobbezoo F., Michelotti A., Brooks S.L., Ceusters W., Drangsholt M., Ettlin D., Gaul C., Goldberg L., Haythornthwaite J., Hollender L., Jensen R., John M.T., deLaat A., deLeeuw R., Maixner W., van der Meulen M., Murray G.M., Nixdorf D.R., Palla S., Petersson A., Pionchon P., Smith B., Visscher C.M., Zakrzewska J., Dworkin S.F., “Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) for Clinical and Research Applications: Recommendations of the International RDC/TMD Consortium Network and Orofacial Pain Special Interest Group,” *Journal of Oral and Facial Pain and Headache*, 28 (2014), 6–27.
128. R. L. Walls, J. Deck, R. Guralnick, S. Baskauf, R. Beaman, S. Blum, S. Bowers, P. L. Buttigieg, N. Davies, D. Endresen, M. A. Gandolfo, R. Hanner, A. Janning, L. Krishtalka, A. Matsunaga, P. Midford, N. Morrison, É. Ó Tuama, M. Schildhauer, B. Smith, B. J. Stucky, A. Thomer, J. Wiczorek, J. Whitacre, and J. Wooley, “Semantics in Support of Biodiversity Knowledge Discovery: An Introduction to the Biological Collections Ontology and Related Ontologies”, *PLoS One*, March 3, 2014, 10.1371/journal.pone.0089606 (PMC3940615)
129. David Koepsell and Barry Smith, “Beyond Paper”, *The Monist*, 97 (2), April 2014, 222–235.
130. Janna Hastings, Gwen Alexandra Frishkoff, Barry Smith, Mark Jensen, Russell A Poldrack, Jane Lomax, Anita Bandrowski, Fahim T. Imam, Jessica A Turner and Maryann E Martone, “Interdisciplinary perspectives on the development, integration and application of cognitive ontologies”, *Frontiers in Neuroinformatics*, 8:62, 2014.
131. Yongqun He, Sirarat Sarntivijai, Yu Lin, Zuoshuang Xiang, Abra Guo, Shelley Zhang, Desikan Jagannathan, Luca Toldo, Cui Tao and Barry Smith, “OAE: The Ontology of Adverse Events”, *Journal of Biomedical Semantics*, 07/2014, 5:29.
132. Andrew R. Deans, Suzanna E. Lewis, Eva Huala, Sallvatore S. Anzaldo, Michael Ashburner, James P. Balhoff, David C. Blackburn, Judith A. Blake, J. Gordon Burleigh, Bruno Chanet, Laurel D. Cooper, Mélanie Courtot, Sándor Csösz, Hong Cui, Wasila Dahdul, Sandip Das, T. Alexander Dececchi, Agnes Dettai, Rui Diogo, Robert E. Druzinsky, Michel Dumontier, Nico M. Franz, Frank Friedrich, George V. Gkoutos, Melissa Haendel, Luke J. Harmon, Terry F. Hayamizu, Yongqun He, Heather M. Hines, Nizar Ibrahim, Laura M. Jackson, Pankaj Jaiswal, Christina James-Zorn, Sebastian Köhler, Guillaume Lecointre, Hilmar Lapp, Carolyn J. Lawrence, Nicolas Le Novère, John G. Lundberg, James Macklin, Austin R. Mast, Peter E. Midford, István Mikó, Christopher J. Mungall, Anika Oellrich, David Osumi-Sutherland, Helen Parkinson, Martín J. Ramírez, Stefan Richter, Peter N. Robinson, Alan Ruttenberg, Katja S. Schulz, Erik Segerdell, Katja C. Seltsmann, Michael J. Sharkey, Aaron D. Smith, Barry Smith, Chelsea D. Specht, R. Burke Squires, Robert W. Thacker, Anne Thessen, Jose Fernandez-Triana, Mauno Vihinen, Peter D. Vize, Lars Vogt, Christine E. Wall, Ramona L. Walls, Monte Westerfeld, Robert A. Wharton, Christian S. Wirkner, James B. Woolley, Matthew J. Yoder, Aaron M. Zorn, Paula Mabee, “Finding Our Way through Phenotypes”, *PLoS Biology*, January 2015, 13 (1).
133. Cecilia Arighi, Veronica Shamovsky, Anna Maria Masci, Alan Ruttenberg, Barry Smith, Darren A Natale, Cathy Wu, Peter D’Eustachio, “Toll-Like Receptor signaling in vertebrates: testing the integration of protein, complex, and pathway data in the Protein Ontology framework”, *PLoS One*, April 2015, PONE-D-14-45784R2.
134. Barry Smith, Sivaram Arabandi, Mathias Brochhausen, Michael Calhoun, Paolo Ciccarese, Scott Doyle, Bernard Gibaud, Ilya Goldberg, Charles E. Kahn, Jr., James Overton, John Tomaszewski, Metin Gurcan, “Biomedical Imaging Ontologies: A Survey and Proposal for Future Work”, *Journal of Pathology Informatics*, 2015, 6:37. PMC4485195



135. Jingshan Huang, Fernando Gutierrez, Harrison J. Strachan, Dejing Dou, Weili Huang, Barry Smith, Judith A. Blake, Karen Eilbeck, Darren A. Natale, Yu Lin, Bin Wu, Nisansa de Silva, Xiaowei Wang, Zixing Liu, Glen Borchert, Ming Tan, Alan Ruttenberg, “OmniSearch: A semantic search system based on the Ontology for MicroRNA Target (OMIT) for microRNA-target gene interaction data”, *Journal of Biomedical Semantics*, 7:24, May 4, 2016.
136. Anita Bandrowski, Ryan Brinkman, Mathias Brochhausen, Matthew H. Brush, Bill Bug†, Marcus C. Chibucos, Kevin Clancy, Mélanie Courtot, Dirk Derom, Michel Dumontier, Liju Fan, Jennifer Fostel, Gilberto Fragoso, Frank Gibson, Alejandra Gonzalez-Beltran, Melissa A. Haendel, Yongqun He, Mervi Heiskanen, Tina Hernandez-Boussard, Mark Jensen, Yu Lin, Allyson L. Lister, Phillip Lord, James Malone, Elisabetta Manduchi, Monnie McGee, Norman Morrison, James A. Overton, Helen Parkinson, Bjoern Peters, Philippe Rocca-Serra, Alan Ruttenberg, Susanna-Assunta Sansone, Richard H. Scheuermann, Daniel Schober, Barry Smith, Larisa N. Soldatova, Christian J. Stoeckert Jr., Chris F. Taylor, Carlo Torniai, Jessica A. Turner, Randi Vita, Patricia L. Whetzel, Jie Zheng. “The Ontology for Biomedical Investigations”, *PLoS ONE*, 11(4): e0154556, April 29, 2016.
137. Jingshan Huang, Karen Eilbeck, Barry Smith, Judith A. Blake, Dejing Dou, Weili Huang, Darren A. Natale, Alan Ruttenberg, Jun Huan, Michael T. Zimmermann, Guoqian Jiang, Yu Lin, Bin Wu, Harrison J. Strachan, Yongqun He, Shaojie Zhang, Xiaowei Wang, Zixing Liu, Glen M. Borchert and Ming Tan, “The Non-Coding RNA Ontology (NCRO): a comprehensive resource for the unification of non-coding RNA biology”, *Journal of Biomedical Semantics*, 2016, 7:24, 4 May 2016
138. Andrew D. Spear, Werner Ceusters, Barry Smith, “Functions in Basic Formal Ontology”, *Applied Ontology*, 11 (2), (2016), 103-128.
139. Jingshan Huang, Karen Eilbeck, Barry Smith, Judith A. Blake, Dejing Dou, Weili Huang, Darren A. Natale, Alan Ruttenberg, Jun Huan, Michael T. Zimmermann, Guoqian Jiang, Yu Lin, Bin Wu, Harrison Strachan, Nisansa de Silva, Mohan Vamsi Kasukurthi, Vikash Kumar Jha, Yongqun He, Shaojie Zhang, Xiaowei Wang, Zixing Liu, Glen Borchert, Ming Tan, “The Development of Non-Coding RNA Ontology”, *International Journal of Data Mining and Bioinformatics*, 15 (3), June 25, 2016. DOI: 10.1504/IJDMB.2016.077072.
140. Jie Zheng, Marcelline R. Harris, Anna Maria Masci, Yu Lin, Alfred Hero, Barry Smith and Yongqun He, “The Ontology of Biological and Clinical Statistics (OBCS) for Standardized and Reproducible Statistical Analysis”, *Journal of Biomedical Semantics*, 14 September 2016, 7(1):53.
141. Selja Seppälä, Alan Ruttenberg, Yonatan Schreiber, Barry Smith, “Definitions in Ontologies”, *Cahiers de Lexicologie*, 109, 2 (2016), 175-207.
142. Metin N. Gurcan, John Tomaszewski, James A. Overton, Scott Doyle, Alan Ruttenberg, Barry Smith, “Developing the Quantitative Histopathology Image Ontology (QHIO): A case study using the hot spot detection problem”, *Journal of Biomedical Informatics*, 66 (2017) 129–135.

## NON-REFEREED ARTICLES IN SCHOLARLY JOURNALS

1. Barry Smith, “Historicity, Value and Mathematics”, *Analecta Husserliana*, 4 (1975), 219–239.
2. Barry Smith, “Matematyka a ontologiczna estetyka Ingardena”, *Studia Filozoficzne*, 1/122 (1976), 51–56.
3. Karl Schuhmann and Barry Smith, “Against Idealism: Johannes Daubert vs. Husserl’s *Ideas I*”, *Review of Metaphysics*, 38 (1985), 763–793.  
Reprinted in: Karl Schuhmann, *Selected Papers in Phenomenology*, C. Leijenhorst and P. Steenbakkens (Eds.), Dordrecht, Boston and London: Kluwer (2004), 35–59.
4. Kevin Mulligan and Barry Smith, “Franz Brentano on the Ontology of Mind” (Review article on Brentano’s *Deskriptive Psychologie*), *Philosophy and Phenomenological Research*, 45 (1985), 627–644.
5. Wolfgang Grassl and Barry Smith, “The Politics of National Diversity”, *The Salisbury Review*, 5 (1987), 33–37.  
Reprinted in: R. Scruton (Ed.), *Conservative Thoughts*, London: Claridge Press (1988), 101–114.
6. Kevin Mulligan, Peter Simons and Barry Smith, “Drei Briten in Kakanien”, interview by Axel Bühler in *Information Philosophie*, 3 (1987), 22–33.
7. Johannes Marek and Barry Smith, “Einleitung zu A. Marty’s ‘Elemente der deskriptiven Psychologie’”, *Conceptus*, 21 (1987), 33–48, editors’ introduction to extracts from Marty’s lectures (*ibid.*, 49–66).
8. Barry Smith, “On the Austrianness of Austrian Economics”, *Critical Review*, 4, 1-2 (1990), 212–238.

9. Barry Smith, “The Question of Apriorism”, *Austrian Economics Newsletter*, (Fall 1990), 1–5.  
Reprinted in *Rothbard e neo-hayekiani nella Scuola austriaca di economia* (Special issue of *Nuova Civiltà delle Macchine*), Dario Antiseri, Enzo Di Nuoscio, Francesco Di Iorio (Eds.), June 2011, 59–68.  
Czech translation: “Apriorizmus v ekonomii”
10. Barry Smith, “Puntel on Truth, Or: Old Idealistic Wine in New Semantic Bottles”, *Ethik und Sozialwissenschaften. Streitforum für Erwägungskultur*, 3 (1992), 166–169.
11. Barry Smith, “No Philosophy. No Transformation. No Theses” [peer commentary on Herta Nagl-Docekal, “The Feminist Transformation of Philosophy”], *Ethik und Sozialwissenschaften. Streitforum für Erwägungskultur*, 4 (1992), 571–573.
12. Barry Smith, “Report on the International Brentano Conference. Graz, 25–26 May 1990”, in *Nachrichten der Forschungsstelle und des Dokumentationszentrums für Österreichische Philosophie*, 2 (1990), 9–12.
13. Barry Smith, “First International Summer Institute in Cognitive Science held at UB”, *UB International*, 3/2 (1994), 4, 7.
14. Barry Smith, “On Feminist Nomadism”, *Free Inquiry*, 15/2 (1995), 30–31.
15. Ellen Klein and Barry Smith, “Philosophy and Feminist Politics: A Brief Guide”, *Free Inquiry*, 16/1 (1995/96), 60–61.
16. Barry Smith, “Questionnaire on Cognitive Science”, *Kog-Bit. Journal aus dem Graduiertenkolleg Kognitionswissenschaft der Universität Hamburg*, 13 (1996), 12.
17. Barry Smith and Peter Baumann, “Von Kant über Pol Pot zu Derrida”, *KogBit. Journal aus dem Graduiertenkolleg Kognitionswissenschaft der Universität Hamburg*, 14 (1996), 8–11. Revised version as “The Worst Cognitive Performance in History”, *Nousletter*, 1997, 13–15.
18. Barry Smith, “Bringing the Humanities Down to Earth”, *Academic Questions*, 10 (4), 1997, 58-62.
19. Barry Smith, “Applied Ontology: A New Discipline is Born”, *Philosophy Today*, vol. 12, number 29 (1998), 5–6.  
Italian translation as “Ontologo, il mestiere del futuro: È nata l’ontologia applicata”, in: *Il Sole 24 Ore* (May 24, 1998), p. 35.
20. Barry Smith, “Qu’est-ce qu’une niche? Biologie et Ontologie formelle”, *Biofutur. Le Mensuel européen de Biotechnologie*, 181 (September 1998), 13.
21. Barry Smith, “Presidential Teaching Tool”, *Nousletter* (Buffalo), (July 1999), 3–4.
22. Reinhold Steingröver-McRae and Barry Smith, “The Last Days of the Human Race”, *Austria Kultur*, 9: 5 (September/October 1999), 16–17.
23. Barry Smith, “Revisiting the Derrida Affair,” interview by J. Sims, *Sophia*, 38: 2 (October 1999).
24. Barry Smith, “Obiektywnosc percepcji zmyslowej”, *Roczniki Filozoficzne* 49: 1 (2001), 63–75.
25. Barry Smith, “From Classical Metaphysics to Medical Informatics”, *Humboldt-Kosmos*, 79 (July 2002), 31–32.  
Italian translation as: “Dalla metafisica classica all’informatica medica” in Maurizio Ferraris (Ed.), *Ontologia*, Naples: Guida (2003), 154–158.
26. Barry Smith, “Groups, Sets, and Wholes”, *Revista di estetica*, N.S. 24/3 (2003), 129–130.
27. Barry Smith and Werner Ceusters, “Towards Industrial Strength Philosophy: How Analytical Ontology Can Help Medical Informatics”, *Interdisciplinary Science Reviews*, 28 (2003), 106–111.  
Italian translation as: “Verso una filosofia al servizio dell’industria: l’utilità dell’ontologia analitica per l’informatica medica”, *Sistemi Intelligenti*, 15: 3 (2003), 407–417.
28. Barry Smith, “The Measure of Civilizations”, *Academic Questions*, 16: 1 (2002/03), 16–22.  
Russian translation
29. Barry Smith, “Il senso della vita, oltre ogni nichilismo”, *Il Domenicale* (3 May 2003), 5.
30. Interview with Barry Smith, *COSIT Features*, 2003 (on-line interview series on spatial information theory).
31. Barry Smith, “Soldi, elezioni e molecole”, *Il Sole 24 Ore* (7 December 2003), 37.
32. Barry Smith and Berit Brogaard, “E il 16° giorno nacque un nuovo individuo”, *Il Sole 24 Ore* (21 December 2003).
33. Barry Smith and Enrico Berti, “Le prime cellule non sono già umane? No, altrimenti saremmo nati due volte”, *Il Sole 24 Ore* (28 December 2003).
34. Barry Smith, “Die Ontologie als Grundlagenwissenschaft der Informatik”, interview in *Information Philosophie*, 3 (2003), 120–123.

35. Barry Smith and Dirk Siebert, “Warum benutzen Ärzte keine Computer?“, *Deutsches Ärzteblatt/Praxis Computer* (January 2004), 18–20.
36. Barry Smith, “Die ganze Welt ist eine Bühne“, *Interdisciplinary Phenomenology* (Kyoto), 1 (2004), 31–44.
37. Barry Smith, Werner Ceusters and Dirk Siebert, “Was die philosophische Ontologie zur biomedizinischen Informatik beitragen kann“, *Information: Wissenschaft und Praxis*, 55: 3 (2004), 143–146.
38. Barry Smith, Maurizio Ferraris and Leonardo Zaibert, “La costituzione ontologica“, *Il sole 24 Ore* (27 June 2004).
39. Barry Smith, “Niente è più sicuro della morte e delle tasse“, *Il sole 24 Ore* (7 December 2004).
40. James J. Cimino and Barry Smith, “Introduction: International Medical Informatics Association Working Group 6 and the 2005 Rome Conference“, *Journal of Biomedical Informatics*, 2006; 39(3): 249–251.
41. Barry Smith, “Philosophical Flaws in Standardization“, *The Risks of Freedom Briefing*, 26 (2006), 3.
42. Thaddeus H. Grasela, Jill Fiedler-Kelly, Brenda Cirincione, Darcy Hitchcock, Kathleen Reitz, Susanne Sardella, and Barry Smith, “Informatics: The Fuel For Pharmacometric Analysis“, *AAPS Journal*, 2007; March, 9(1), E84–E91. PMC2751306
43. Barry Smith, “The Open Biomedical Ontologies (OBO) Foundry in 2008“, *MMHCC (Mouse Models of Human Cancer Consortium) Newsletter*, March 2008, 1–2.
44. Robert Arp and Barry Smith, “Ontologies of Cellular Networks“, *Science Signalling*, Vol. 1, Issue 50 (December 2008), 1-3, DOI: 10.1126/scisignal.150mr2.
45. Barry Smith, Louis J. Goldberg, Alan Ruttenberg and Michael Glick, “Ontology and the Future of Dental Research Informatics“, *The Journal of the American Dental Association*, October, 141 (10), 2010, 1173–75.
46. Barry Smith and Richard H. Scheuermann, “Ontologies for Clinical and Translational Research“, *Journal of Biomedical Informatics*, 44:1 (2011), 3–7.
47. Barry Smith, Louis J. Goldberg, Alan Ruttenberg and Michael Glick, “Ontology and Research: Authors’ Response“, *The Journal of the American Dental Association*, 142(3), 2011, 252–54.
48. Fabian Neuhaus, Elizabeth Florescu, Antony Galton, Michael Gruninger, Nicola Guarino, Leo Obrst, Arturo Sánchez-Ruiz, Amanda Vizedom, Peter Yim and Barry Smith, “Creating the Ontologists of the Future“, *Applied Ontology* 6 (2011), 91–98.
49. Barry Smith, “Guest Editorial: caBIG has another fundamental problem: it relies on ‘incoherent’ messaging standard“, *The Cancer Letter*, 37: 16, April 22, 2011, 1 and 5–6.
50. Stefano Borgo, Riichiro Mizoguchi and Barry Smith, “On the Ontology of Functions“, *Applied Ontology*, 6 (2011), 99–104.
51. Andreas Tolk and Barry Smith, “Editors’ Introduction to Special Issue on Command and Control Ontology“, *International Journal of Intelligent Defence Support Systems*, 4 (3), 2011, 209–214.
52. Dipak Kalra, Mark Musen, Barry Smith, Werner Ceusters, “Policy Brief on Semantic Interoperability“, *Interoperability Reviews: ARGOS Trans-Atlantic Observatory Policy Briefs*, Washington, DC: American Medical Informatics Association, Summer 2011, Vol. 2 No. 1.
53. Georg Fuellen, Melanie Boerries, Hauke Busch, Aubrey de Grey, Udo Hahn, Thomas Hiller, Andreas Hoefflich, Ludger Jansen, Georges E. Janssens, Christoph Kaleta, Anne C. Meinema, Sascha Schäuble, Paul N. Schofield, Barry Smith, Jürgen Sühnel, Julio Vera, Wolfgang Wagner, Eva C. Wonne, Daniel Wuttke, “In-Silico-Approaches and the Role of Ontologies in Aging Research“, *Rejuvenation Research*, 2013 Dec;16(6):540-6.
54. Barry Smith, “It Usually Begins with the Gene Ontology“, *Methods of Information in Medicine*, 2013, 52 (6), 559-60. Comment on P. L. Elkin, S. H. Brown and G. Wright, “Biomedical Informatics: We Are What We Publish“, *Methods of Information in Medicine*, 2013, 52 (6), 538-546.
55. Carolyn Korsmeyer and Barry Smith, “Comment: Kolnai’s Disgust“, *Emotion Review*, 6 (3), 2014, 221–222.
56. *An interview with the Editor of The Monist*, May 31, 2015, OUPblog.
57. “Faculty Interview: Barry Smith“, *NousLetter*, 21, Summer 2015, 13-17.
58. “The Curious Case of the Complicated Border: The Story of Baarle,“ *Dutch International Society Magazine*, 47 (4), 2016, 11-17.

---

## CHAPTERS IN BOOKS

1. Barry Smith, “Roman Ingarden: Ontological Foundations for Literary Theory”, in J. Odmark (Ed.), *Language, Literature and Meaning I: Problems of Literary Theory*, Amsterdam: Benjamins, 1979, 373–390.
2. Barry Smith, “Kafka and Brentano: A Study in Descriptive Psychology”, in Barry Smith (Ed.), *Structure and Gestalt: Philosophy and Literature in Austria-Hungary and Her Successor States*, Amsterdam: John Benjamins, 1981, 113–161.  
Revised version as: “Brentano and Kafka”, *Axiomathes*, 8 (1997), 83–104.  
French translation as: “Kafka et Brentano”, *Philosophiques*, 26/2 (1999), 349–371.
3. Barry Smith, “The Production of Ideas: Notes on Austrian Intellectual History from Bolzano to Wittgenstein”, in Barry Smith (Ed.), *Structure and Gestalt: Philosophy and Literature in Austria-Hungary and Her Successor States*, Amsterdam: John Benjamins, 1981, 211–234.
4. Barry Smith and Kevin Mulligan, “Pieces of a Theory”, in Barry Smith (Ed.), *Parts and Moments. Studies in Logic and Formal Ontology*, Munich: Philosophia, 1982, 15–109.
5. Barry Smith, “Introduction to Adolf Reinach, ‘On the Theory of the Negative Judgment’”, in Barry Smith (Ed.), *Parts and Moments. Studies in Logic and Formal Ontology*, Munich: Philosophia, 1982, 289–313.
6. Barry Smith, “Meinen und Vorstellen in der literarischen Gegenstandskonstitution”, in G. Wolandt (Ed.), *Kunst und Kunstforschung. Beiträge zur Ästhetik*, Bonn: Bouvier, 1983, 49–61.
7. Barry Smith, “Summaries and Note: On the Political Economy of Karl Wittgenstein”, in J. C. Nyiri (Ed.), *Karl Wittgenstein: Politico-Economic Writings*, Amsterdam: John Benjamins, 1984, 197–227.
8. Barry Smith, “Wittgenstein und das ethische Gesetz”, in D. Birnbacher and A. Burkhardt (Eds.), *Sprachspiel und Methode. Zum Stand der Wittgenstein-Diskussion*, Berlin/New York: de Gruyter, 1985, 191–211.
9. Barry Smith, “Preface: Austrian Economics from Menger to Hayek”, in Wolfgang Grassl and Barry Smith (Eds.), *Austrian Economics: Historical and Philosophical Background*, New York: New York University Press, London/Sydney: Croom Helm, 1986, v–viii.
10. Barry Smith, “Austrian Economics and Austrian Philosophy”, in Wolfgang Grassl and Barry Smith (Eds.), *Austrian Economics: Historical and Philosophical Background*, New York: New York University Press, London/Sydney: Croom Helm, 1986, 1–36, reprinted in the series Routledge Revivals, London: Routledge, 2010.
11. Barry Smith, “The Theory of Value of Christian von Ehrenfels”, in R. Fabian (Ed.), *Christian von Ehrenfels: Leben und Werk*, Amsterdam: Rodopi, 1986, 150–171.
12. Kevin Mulligan and Barry Smith, “Mach und Ehrenfels: Über Gestaltqualitäten und das Problem der Abhängigkeit”, in R. Fabian (Ed.), *Christian von Ehrenfels: Leben und Werk*, Amsterdam: Rodopi, 1986, 85–111.  
Revised and expanded English version as: “Mach and Ehrenfels: The Foundations of Gestalt Theory”, in Barry Smith (Ed.), *Foundations of Gestalt Theory*, Munich and Vienna: Philosophia, 1988, 124–157.  
Romanian translation as: “Mach și Ehrenfels. Fundamentele teoriei gestaltiste”, in Constantin Stoenescu, Ion Tănăsescu (Eds.), *Filosofia Austriacă*, Bucharest: Pelican, 2005, 262–294.
13. Barry Smith, “Materials Towards a History of Speech Act Theory”, in A. Eschbach (Ed.), *Karl Bühler’s Theory of Language*, Amsterdam: John Benjamins, 1987, 125–152.  
Revised and expanded version as: “Towards a History of Speech Act Theory”, in A. Burkhardt (Ed.), *Speech Acts, Meanings and Intentions. Critical Approaches to the Philosophy of John R. Searle*, Berlin/New York: de Gruyter, 1990, 29–61.  
Italian translation as: “Per una storia della teoria degli atti linguistici”, in: *Il realismo fenomenologico. Sulla filosofia dei circoli di Monaco e Gottinga*, Stefano Besoli e Luca Guidetti (Eds.), Macerata: Quodlibet, 2000, 385–418.  
Spanish translation as: “Una breve historia de la teoría de los actos de habla”, in *Pragmatica: Desarrollos teóricos y debates*, translated by Jorge Gómez, Quito: Edición Abya-Yala, 2002, 13–82.
14. Barry Smith, “Husserl, Language and the Ontology of the Act”, in D. Buzzetti and M. Ferriani (Eds.), *Speculative Grammar, Universal Grammar, and Philosophical Analysis of Language*, Amsterdam: John Benjamins, 1987, 205–227.
15. Barry Smith, “On the Cognition of States of Affairs”, in K. Mulligan (Ed.), *Speech Act and Sachverhalt: Reinach and the Foundations of Realist Phenomenology*, Dordrecht/Boston/Lancaster: Nijhoff, 1987, 189–225.

- Italian translation as: “Adolf Reinach e la fondazione della fenomenologia realistica”, *Paradigmi*, 5 (1987), 229–241 and 6 (1987), 485–507.
16. Karl Schuhmann and Barry Smith, “Adolf Reinach: An Intellectual Biography”, in K. Mulligan (Ed.), *Speech Act and Sachverhalt: Reinach and the Foundations of Realist Phenomenology*, Dordrecht/Boston/Lancaster: Nijhoff, 1987, 1–27.
  17. Barry Smith, “Austrian Origins of Logical Positivism”, in B. Gower (Ed.), *Logical Positivism in Perspective*, London/Sydney: Croom Helm, 1987, Totowa: Barnes and Noble, 1988, 35–68.  
Reprinted in: K. Szaniawski (Ed.), *The Vienna Circle and the Lvov-Warsaw School*, Dordrecht/Boston/Lancaster: Kluwer, 1989, 19–53.
  18. Barry Smith, “Gestalt Theory: An Essay in Philosophy”, in Barry Smith (Ed.), *Foundations of Gestalt Theory*, Munich and Vienna: Philosophia, 1988, 11–81.
  19. Barry Smith, “Knowing How vs. Knowing That”, in J. C. Nyiri and Barry Smith (Eds.), *Practical Knowledge. Outlines of a Theory of Traditions and Skills*, London/Sydney/New York: Croom Helm, 1988, 1–16.
  20. Barry Smith, “Practices of Art”, in J. C. Nyiri and Barry Smith (Eds.), *Practical Knowledge. Outlines of a Theory of Traditions and Skills*, London/Sydney/New York: Croom Helm, 1988, 172–209.
  21. Barry Smith, “Logic and Formal Ontology”, in J. N. Mohanty and W. McKenna (Eds.), *Husserl’s Phenomenology: A Textbook*, Lanham: University Press of America, 1989, 29–67.  
Revised version in: *Manuscrito*, 23: 2, 2000, 275–323.  
Italian translation as: “Logica e ontologia formale nelle *Logische Untersuchungen* di Edmund Husserl”, *Rivista di Filosofia*, 83, 1991, 53–70.  
Spanish translation as: “Lógica y ontología formal”, Grupo de Acción Filosófica (GAF), Buenos Aires, Argentina, 2004.  
Russian translation
  22. Barry Smith, “Kasimir Twardowski: An Essay on the Borderlines of Psychology, Ontology and Logic”, K. Szaniawski (Ed.), *The Vienna Circle and the Philosophy of the Lvov-Warsaw School*, Dordrecht/Boston/Lancaster: Kluwer, 1989, 313–373.  
Revised version as: “Kasimir Twardowski: On Content and Object”, chapter 6 of Barry Smith, *Austrian Philosophy: The Legacy of Franz Brentano*, La Salle and Chicago: Open Court, 1994, 160–200.
  23. Barry Smith, “Constraints on Correspondence” in *Traditionen und Perspektiven der analytischen Philosophie. Festschrift für Rudolf Haller*, H. Rutte, W. Sauer and W. Gombocz (Eds.), Vienna: Hölder/Pichler/Tempsky, 1989, 415–430.
  24. Barry Smith, “Logica Kirchbergensis”, in P. Klein (Ed.), *Praktische Logik. Traditionen und Tendenzen*, Abhandlungen eines Seminars beim 13. Internationalen Wittgenstein-Symposium, Kirchberg am Wechsel 1988 (Veröffentlichungen der Joachim-Jungius Gesellschaft Hamburg, 61), Göttingen: Vandenhoeck & Ruprecht, 1989, 123–145.
  25. Karl Schuhmann and Barry Smith, “Vorwort”, editors’ forward to vol. I of Adolf Reinach, *Sämtliche Werke. Kritische Ausgabe mit Kommentar*, Karl Schuhmann and Barry Smith (Eds.), Munich/Hamden/Vienna: Philosophia, 1989, XIV–XVIII.
  26. Karl Schuhmann and Barry Smith, “Adolf Reinach (1884-1917)”, editors’ introduction to vol. II of Adolf Reinach, *Sämtliche Werke. Kritische Ausgabe mit Kommentar*, Karl Schuhmann and Barry Smith (Eds.), Munich/Hamden/Vienna: Philosophia, 1989, 613–626.
  27. Karl Schuhmann and Barry Smith, “Kommentar und Textkritik”, critical apparatus to vol. II of Adolf Reinach, *Sämtliche Werke. Kritische Ausgabe mit Kommentar*, Karl Schuhmann and Barry Smith (Eds.), Munich/Hamden/Vienna: Philosophia, 1989, 627–829.
  28. Barry Smith, “The Philosophy of Austrian Economics: Principles and Provocations”, in S. C. Littlechild (Ed.), *Austrian Economics*, vol. I, Aldershot/Brookfield VT: Edward Elgar, 1990, 527–538.
  29. Barry Smith, “Brentano and Marty: An Inquiry into Being and Truth”, in K. Mulligan (Ed.), *Mind, Meaning and Metaphysics: The Philosophy and Theory of Language of Anton Marty*, Dordrecht/Boston/Lancaster: Kluwer, 1990, 111–149.  
Revised version as: “Anton Marty: On Being and Truth”, chapter 4 of Barry Smith, *Austrian Philosophy: The Legacy of Franz Brentano*, La Salle and Chicago: Open Court, 1994.
  30. Barry Smith, “On the Phases of Reism”, in J. Wolenski, Ed., *Kotarbinski: Logic, Semantics and Ontology*, Dordrecht/Boston/London: Kluwer, 1990, 137–184.  
Reprinted in: *Actions, Products, and Things. Brentano and Polish Philosophy*, A. Chrudzimski and D. Łukasiewicz (Eds.), Frankfurt: ontos, 2006, 115–176.

31. Jean Petitot and Barry Smith, “New Foundations for Qualitative Physics”, in J. E. Tiles, G. T. McKee and C. G. Dean (Eds.), *Evolving Knowledge in Natural Science and Artificial Intelligence*, London: Pitman Publishing, 1990, 231–249.  
Russian translation
32. Barry Smith, “Grundlegung eines fallibilistischen Apriorismus”, in N. Leser, J. Seifert and K. Pflitzner (Eds.), *Die Gedankenwelt Sir Karl Poppers. Kritischer Rationalismus im Dialog*, Heidelberg: Carl Winter Universitätsverlag, 1991, 393–411.  
English translation as: “In Defense of Extreme (Fallibilistic) Apriorism”, *Journal of Libertarian Studies* 12 (1996), 179–192.  
Russian translation
33. Barry Smith, “Relevance, Relatedness and Restricted Set Theory”, in G. Schurz and G. J. W. Dorn (Eds.), *Advances in Scientific Philosophy. Essays in Honour of Paul Weingartner*, Amsterdam/Atlanta: Rodopi, 1991, 45–56.
34. Barry Smith, “Characteristica Universalis”, in K. Mulligan (Ed.), *Language, Truth and Ontology* (Philosophical Studies Series), Dordrecht/Boston/London: Kluwer, 1992, 48–77.  
Danish translation in: *Almen Semiotik*, 14 (1998), 158–187.
35. Barry Smith, “Austrian Philosophy and Austrian Economics”, in J. Lee Auspitz, et al. (Eds.), *Praxiologies and the Philosophy of Economics*, New Brunswick and London: Transaction Publishers, 1992, 245–272.
36. Barry Smith, “Ontology and the Logistic Analysis of Reality”, in N. Guarino and R. Poli (Eds.), *Proceedings of the International Workshop on Formal Ontology in Conceptual Analysis and Knowledge Representation*, Padova: Institute for Systems Theory and Biomedical Engineering of the Italian National Research Council, 1993, 51–68.  
Polish translation as: “Ontologia i logiczna analiza rzeczywistosci”, in *Filozofia Nauki*, 2 (1994), 5–22.
37. Barry Smith, “The New European Philosophy” in Barry Smith (Ed.), *Philosophy and Political Change in Eastern Europe*, La Salle: The Hegeler Institute, 1993, 165–170 and 191–192.
38. Barry Smith, “Husserl’s Theory of Meaning and Reference”, in L. Haaparanta (Ed.), *Mind, Meaning and Mathematics. Essays on the Philosophy of Husserl and Frege*, Dordrecht/Boston/Lancaster: Kluwer, 1994, 163–183.
39. Barry Smith, “Filozofia Austriacka” in T. Lubowiecki and A. Rojszczak (Eds.), *Filozofia Austriacka (Principia VIII–IX)*, Cracow: Aureus S.C., 1994, 19–50. Polish translation of Chapter 1 of Barry Smith, *Austrian Philosophy: The Legacy of Franz Brentano*, La Salle and Chicago: Open Court, 1994.
40. Josef Seifert and Barry Smith, “The Truth about Fiction”, in W. Galewicz, E. Ströker and W. Strozewski (Eds.), *Kunst und Ontologie. Für Roman Ingarden zum 100. Geburtstag*, Amsterdam/Atlanta: Rodopi, 1994, 97–118.
41. Barry Smith and David W. Smith, “Introduction” to Barry Smith and David W. Smith (Eds.), *The Cambridge Companion to Husserl*, Cambridge and New York: Cambridge University Press, 1995, 1–44.
42. Barry Smith, “Common Sense”, in Barry Smith and David W. Smith (Eds.), *The Cambridge Companion to Husserl*, Cambridge and New York: Cambridge University Press, 1995, 394–436.
43. Barry Smith, “The Neurath–Haller Thesis: Austria and the Rise of Scientific Philosophy”, in K. Lehrer and J. C. Marek (Eds.), *Austrian Philosophy Past and Present* (Boston Studies in the Philosophy of Science), Dordrecht/Boston/Lancaster: Kluwer, 1996, 1–20.  
Reprinted as: “Austria and the Rise of Scientific Philosophy”, in A. Chrudzimski and W. Huemer (Eds.), *Phenomenology and Analysis. Essays on Central European Philosophy*, Frankfurt and Lancaster:ontos, 2004, 33–56.  
French version as: “L’Autriche et la naissance de la philosophie scientifique”, *Actes de la Recherche en Sciences Sociales* (Paris), 109 (1995), 61–71.
44. Barry Smith, “Foreword” to Wojciech Zelaniec, *The Recalcitrant Synthetic A Priori*, Lublin: Artom, 1996, 7–8.
45. Barry Smith and Leonardo Zaibert, “Prolegomena to a Metaphysics of Real Estate”, in Roberto Casati (Ed.), *Shadows and Socio-Economic Units. Foundations of Formal Geography*, Department of Geoinformation, Technical University of Vienna, 1996, 151–155.
46. Barry Smith, “Pleasure and Its Modifications: Stephan Witasek and the Aesthetics of the Grazer Schule”, in L. Albertazzi (Ed.), *The Philosophy of Alexius Meinong (Axiomathes VII, nos. 1–2)*, 1996, 203–232.
47. Barry Smith, “The Connectionist Mind: A Study of Hayekian Psychology”, in S. F. Frowen (Ed.), *Hayek: Economist and Social Philosopher: A Critical Retrospect*, London: Macmillan, 1997, 9–29.  
French translation as: “L’esprit connexionniste: une étude de la psychologie de Hayek”, *Intellectica*, 28: 1, 1999, 93–115.

48. Jean Petitot and Barry Smith, “Physics and the Phenomenal World”, in R. Poli and P. M. Simons (Eds.), *Formal Ontology*, Dordrecht/Boston/Lancaster: Kluwer, 1997, 233–254.  
Russian translation in: *Ophyr*, n.d.
49. Barry Smith, “Boundaries: An Essay in Mereotopology”, in L. H. Hahn (Ed.), *The Philosophy of Roderick Chisholm* (Library of Living Philosophers), Chicago and LaSalle: Open Court, 1997, 534–561.
50. Barry Smith, “Truth and the Visual Field”, in *Naturalizing Phenomenology. Issues in Contemporary Phenomenology and Cognitive Science*, edited by J. Petitot, F. J. Varela, B. Pachoud and J. M. Roy, Stanford: Stanford University Press, 2000, 317–329.  
Preprinted in: Carola Eschenbach and Wolfgang Heydrich (Eds.), *Parts and Wholes. Integrity and Granularity*, Hamburg: Graduiertenkolleg Kognitionswissenschaft, 1995, 109–118.  
Italian translation as: “La verità e il campo visivo”, *Paradigmi*, 17, 1999, 48–62.  
French translation as: “La vérité et le champ visuel”, in *Naturaliser la phénoménologie: Husserlianisme et science cognitive*, Paris: CNRS Editions, 2002, 411–426.
51. Artur Rojczak and Barry Smith, “Urteilstheorien und Sachverhalte”, in Otto Neumaier (Ed.), *Satz und Sachverhalt*, Sankt Augustin: Academia Verlag, 2000, 9–72.
52. Barry Smith, “Objects and Their Environments: From Aristotle to Ecological Psychology”, in Andrew Frank, Jonathan Raper and Jean-Paul Cheylan (Eds.), *The Life and Motion of Socio-Economic Units* (GISDATA 8), London: Taylor and Francis, 2001, 79–97.  
German version as: “Gegenstände und ihre Umwelten: Von Aristoteles zur ökologischen Ontologie”, in Barbara Boisits and Sonja Rinofner-Kreidl (Eds.), *Einheit und Vielheit. Organologische Denkmodelle in der Moderne*, Vienna: Passagen Verlag, 2000, 35–64.
53. Barry Smith, “Aristoteles, Kant und die Quantenphysik”, in Ruth Hagenruber (Ed.), *Philosophie und Wissenschaft*, Würzburg: Königshausen und Neumann, 2002, 79–97.
54. Gerald J. Erion and Barry Smith, “Skepticism, Morality, and *The Matrix*”, in W. Irwin (Ed.), *Philosophy and The Matrix*, La Salle and Chicago: Open Court, 2002, 16–27.
55. Artur Rojczak and Barry Smith, “Theories of Judgment”, in Thomas Baldwin (Ed.), *The Cambridge History of Philosophy 1870-1945*, Cambridge: Cambridge University Press, 2003, 157–173.
56. Barry Smith, “John Searle: From Speech Acts to Social Reality”, in Barry Smith (Ed.), *John Searle*, Cambridge: Cambridge University Press, 2003, 1–33.  
Polish translation as: “John Searle: Od aktów mowy do rzeczywistości społecznej”, *Roczniki Filozoficzne*, 51: 1, 2003, 265–292.  
Italian translation as: “Un’aporia nella costruzione della realtà sociale. Naturalismo e realismo in John R. Searle”, in: Paolo Di Lucia (Ed.), *Ontologia sociale: Potere deontico e regole costitutive*, Macerata: Quodlibet, 2003, 137-152. Translation appeared in a partial version also in *Il Sole-24 Ore*, Sunday, 7 December 2003, n. 335, p. 32.  
Russian translation
57. Barry Smith and Leo Zaibert, “Real Estate: Foundations of the Ontology of Property”, in Heiner Stuckenschmidt, Erik Stubjkaer and Christoph Schlieder (Eds.), *The Ontology and Modelling of Real Estate Transactions*, Aldershot: Ashgate, 2003, 51–67.
58. Barry Smith, “Aristoteles 2002”, in T. Buchheim, H. Flashar and R. A. H. King (Eds.), *Kann man heute noch etwas anfangen mit Aristoteles?*, Hamburg: Meiner, 2003, 3–38.
59. Thomas Bittner and Barry Smith, “A Theory of Granular Partitions”, *Foundations of Geographic Information Science*, Matthew Duckham, Michael F. Goodchild and Michael F. Worboys (Eds.), London: Taylor & Francis, 2003, 117–151.  
Revised version in K. Munn and B. Smith (Eds.), *Applied Ontology: An Introduction*, Frankfurt/Lancaster:ontos, 2008, 125–158.  
Revised German version as “Granulare Partitionen”, in L. Jansen and B. Smith (Eds.), *Biomedizinische Ontologie. Philosophie – Lebenswissenschaften – Informationstechnik* (UTB Forum), Zurich: vdf, 2008, 67–84.
60. Barry Smith, “The Ecological Approach to Information Processing”, in Kristóf Nyíri (Ed.), *Mobile Learning: Essays on Philosophy, Psychology and Education*, Vienna: Passagen Verlag, 2003, 17–24.  
Hungarian translation: “Az adatfeldolgozás ökológiai megközelítése”, *Proceedings of the Conference on Philosophy, Psychology, Culture*, held in the Hungarian Academy of Sciences, Budapest, 29-30 November 2002.
61. Barry Smith, “Ontology”, in Luciano Floridi (Ed.), *Blackwell Guide to the Philosophy of Computing and Information*, Oxford: Blackwell, 2003, 155–166.  
Reprinted in Guillermo Hurtado and Oscar Nudler (Eds.), *The Furniture of the World. Essays in Ontology and Metaphysics* (Rodopi Studies in Philosophy, vol. 9), Amsterdam: Rodopi, 2012, 47–68.

- Spanish translation as: “Ontología” in G. Hurtado and O. Nudler (Eds.), *El mobiliario del mundo. Ensayos de ontología y metafísica*, Mexico: Universidad Autónoma de México, 2007, 47–71.
- Italian translation as: “Ontologia e sistemi informativi” in: *Networks*, 6, 2006, 137–164.
62. Barry Smith, “Kraus on Weininger, Kraus on Women, Kraus on Serbia” in Wolfgang Huemer and Marc-Oliver Schuster (Eds.): *Writing the Austrian Traditions: Relations Between Philosophy and Literature*, Edmonton: University of Alberta Press and Frankfurt/Lancaster: Ontos, 2003, 81–100.
63. Barry Smith, “Kamikaze – und der Westen”, in Geog Meggle (Ed.), *Terror und der Krieg gegen ihn: Öffentliche Reflexionen*, Paderborn: Mentis, 2003, 107–118.
64. Artur Rojszczak and Barry Smith, “Truthmakers, Truthbearers and the Objectivity of Truth”, in J. Hintikka, et al. (Eds.), *Philosophy and Logic: In Search of the Polish Tradition*, Dordrecht/Boston/Lancaster: Kluwer, 2003, 229–268.
65. Arkadiusz Chrudzinski and Barry Smith, “Brentano’s Ontology: From Conceptualism to Realism”, in Dale Jacquette (Ed.), *The Cambridge Companion to Brentano*, Cambridge: Cambridge University Press, 2004, 175–194.  
Reprinted in *Brentano (Major Works series)*, Cambridge University Press and Routledge, in press.
66. Carolyn Korsmeyer and Barry Smith, “Visceral Values: Aurel Kolnai on Disgust,” in Aurel Kolnai, *On Disgust*, Chicago and La Salle: Open Court Publishing Company, 2004, 1–23.
67. Barry Smith, “Carving Up Reality”, in M. Gorman and J. Sanford (Eds.), *Categories: Historical and Systematic Essays*, Washington: Catholic University of America Press, 2004, 225–237.  
Spanish translation as “Tallando la realidad”, in Juan González (Ed.), *Perspectivas contemporáneas sobre la cognición: percepción, categorización y conceptualización*, Madrid: Siglo XXI Editores, 2006, 53–68.
68. David M. Mark and Barry Smith, “A Science of Topography: From Qualitative Ontology to Digital Representations”, in Michael P. Bishop and John F. Shroder (Eds.), *Geographic Information Science and Mountain Geomorphology*, Chichester, England: Springer-Praxis, 2004, 75–100.
69. David Mark, Barry Smith, Max Egenhofer, Stephen Hirtle “UCGIS Emerging Research Themes: Ontological Foundations for Geographic Information Science”, in: R. B. McMaster and E. L. Usery (Eds.), *A Research Agenda for Geographic Information Science*, Boca Raton, Florida: CRC Press, 2004, 335–350.
70. Barry Smith, “Why Polish Philosophy Does Not Exist”, J. J. Jadacki and J. Pasniczek (Eds.), *The Lvov-Warsaw School: The New Generation* (Poznan Studies in the Philosophy of the Sciences and the Humanities, vol. 89), 2006, 19–39.  
Polish translation: “Dlaczego nie istnieje filozofia polska?”, *Filozofia Nauki*, 5 (1997), 5–15.
71. Barry Smith and Wolfgang Grassl, “On Creativity and the Philosophy of the Supranational State”, in Tamás Demeter (Ed.), *Essays on Wittgenstein and Austrian Philosophy: In Honour of J. C. Nyíri*, Amsterdam/New York: Rodopi, 2004, 25–39.
72. Barry Smith, “La signification de la vie, et comment il convient d’évaluer les civilisations”, in *Histoire du Libéralisme en Europe*, Philippe Nemo and Jean Petitot (Eds.), Paris: Presses Universitaires de France, 2006, 1399–1411.  
Italian translation as “Il significato della vita: come valutare una civiltà” in P. Nemo and J. Petitot (Eds.), *Storia del liberalismo in Europa*, Soveria Mannelli: Rubbettino, 2013, 1225–1234.  
English original as: *The Meaning of Life and the Measure of Civilizations* (Brochure 9 in the series The History of Liberalism in Europe), Paris: CREA/CREPHE, 2002, 22 pp.
73. Barry Smith and David Mark, “Geographical Categories: An Ontological Retrospective”, in Peter Fisher (Ed.), *Classics from the International Journal of Geographical Information Science*, London: Taylor and Francis, 2006, 507–512.
74. Leo Obrst, Werner Ceusters, Inderjeet Mani, Steve Ray, Barry Smith, “The Evaluation of Ontologies: Toward Improved Semantic Interoperability”, in C. Baker and K.-H. Cheung, Ed., *Semantic Web: Revolutionizing Knowledge Discovery in the Life Sciences*, New York: Springer Verlag, 2007, 139–158.
75. Barry Smith and Jonathan Simon, “Truthmaker Explanations”, in: Jean-Maurice Monnoyer, *Metaphysics and Truthmakers*, Frankfurt/Lancaster/New Brunswick: Ontos, 2007, 79–98.  
French translation: “Explications vérificationnistes” in *Philosophiques*, 38 (1), 2011, 277–194.
76. Leo Zaibert and Barry Smith, “The Varieties of Normativity: An Essay on Social Ontology”, in Savas L. Tsohatzidis (Ed.), *Intentional Acts and Institutional Facts: Essays on John Searle’s Social Ontology*, Dordrecht: Springer, 2007, 155–174.



77. Barry Smith and Werner Ceusters, “Ontology as the Core Discipline of Biomedical Informatics: Legacies of the Past and Recommendations for the Future Direction of Research”, in *Computing, Information, Cognition*, Gordana Dodig Crnkovic and Susan Stuart (Eds.), Newcastle: Cambridge Scholars Press, 2007, 104–122.
78. Werner Ceusters and Barry Smith, “Referent Tracking for Corporate Memories”, in P. Rittgen (Ed.), *Handbook of Ontologies for Business Interaction*, Hershey, New York and London: Information Science Reference, 2007, 34–46.
79. Barry Smith and Bert R. E. Klagges, “Ontologie des menschlichen Lebewesens: Substanz und Funktion”, in L. Honnefelder, M. C. Schmidt (Eds.), *Naturalismus als Paradigma – Wie weit reicht die naturwissenschaftliche Erklärung des Menschen?*, Berlin: Berlin University Press, 2007, 61-75.
80. Barry Smith and Berit Brogaard, “Ontologie des Embryos: Wann beginnt menschliches Leben?”, in L. Honnefelder, M. C. Schmidt (Eds.), *Naturalismus als Paradigma - Wie weit reicht die naturwissenschaftliche Erklärung des Menschen?*, Berlin: Berlin University Press, 2007, 196-204.
81. Pierre Grenon and Barry Smith, “Persistence and Ontological Pluralism”, in C. Kanzian (Ed.), *Persistence*, Frankfurt/Lancaster:ontos, 2008, 33-48.
82. Fabian Neuhaus and Barry Smith, “Modelling Principles and Methodologies: Relations in Anatomical Ontologies”, in: Albert Burger, Duncan Davidson and Richard Baldock (Eds.), *Anatomy Ontologies for Bioinformatics: Principles and Practice*, New York: Springer, 2008, 289-305.
83. Melissa A. Haendel, Fabian Neuhaus, David Osumi-Sutherland, Paula M. Mabee, José L. V. Mejino Jr., Chris J. Mungall, Barry Smith, “CARO: The Common Anatomy Reference Ontology”, in: Albert Burger, Duncan Davidson and Richard Baldock (Eds.), *Anatomy Ontologies for Bioinformatics: Principles and Practice*, New York: Springer, 2008, 327-349.
84. Barry Smith, “Searle and De Soto: The New Ontology of the Social World”, Barry Smith, David Mark and Isaac Ehrlich (Eds.), *The Mystery of Capital and the Construction of Social Reality*, Chicago: Open Court, 2008, 35-51.  
Preliminary version as “The Foundations of Social Coordination: John Searle and Hernando de Soto”, in N. Psarros (Ed.), *Facets of Sociality*, Frankfurt: Ontos, 2007, 3-22.
85. Barry Smith and Mathias Brochhausen, “Establishing and Harmonizing Ontologies in an Interdisciplinary Health Care and Clinical Research Environment”, in: B. Blobel P. Pharow and M. Nerlich (Eds.), *eHealth: Combining Health Telematics, Telemedicine, Biomedical Engineering and Bioinformatics on the Edge* (Global Expert Summit Textbook, Studies in Health, Technology and Informatics, 134), IOS Press, Amsterdam, 2008, 219-234.
86. Mathias Brochhausen, Gabriele Weiler, Luis Martín, Cristian Cocos, Holger Stenzhorn, Norbert Graf, Martin Dörr, Manolis Tsiknakis, and Barry Smith, “Applications of the ACGT Master Ontology on Cancer”, R. Meersman, Z. Tari, and P. Herrero (Eds.): *Proceedings of 4th International IFIP Workshop On Semantic Web and Web Semantics (OTM 2008: Workshops)*, LNCS 5333, 2008, 1046–1055.
87. Barry Smith, “Informatica”, in M. Ferraris (Eds.), *Storia dell’Ontologia*, Milan: Bompiani, 2008, 503-530.
88. Barry Smith, “Realitätsrepräsentation: Das Ziel der Ontologie”, in L. Jansen and B. Smith (Eds.), *Biomedizinische Ontologie. Philosophie – Lebenswissenschaften - Informationstechnik* (UTB Forum), Zurich: vdf, 2008, 31-46.
89. Barry Smith “The Benefits of Realism: A Realist Logic with Applications”, in K. Munn and B. Smith (Eds.), *Applied Ontology: An Introduction*, Frankfurt/Lancaster:ontos/Walter de Gruyter, 2008, 109-124.
90. Ulf Schwarz and Barry Smith, “Ontological Relations”, in K. Munn and B. Smith (Eds.), *Applied Ontology: An Introduction*, Frankfurt/Lancaster:ontos/Walter de Gruyter, 2008, 219-234.  
German version “Ontologische Relationen”, in L. Jansen and B. Smith (Eds.), *Biomedizinische Ontologie. Philosophie – Lebenswissenschaften - Informationstechnik* (UTB Forum), Zurich: vdf, 2008, 155-172.
91. Richard H. Scheuermann, Megan Kong, Carl Dahlke, Jennifer Cai, Jamie Lee, Yu Qian, Burke Squires, Patrick Dunn, Jeff Wisner, Herb Hagler, Barry Smith, David Karp, “Ontology-Based Knowledge Representation of Experiment Metadata in Biological Data Mining”, *Biological Data Mining*, Jake Chen and Stefano Lonardi (Eds.), Boca Raton: Chapman Hall / Taylor and Francis, September 2009, 529-559.
92. Lindsay Grey Cowell and Barry Smith, “Infectious Disease Ontology”, in Vitali Sintchenko (Ed.), *Infectious Disease Informatics*, New York: Springer, December 2009, 373-395.
93. Barry Smith, “Signs and Meanings”, *Signs and Meanings: Five Questions*, Peer Bundgaard and Frederik Stjernfelt (Eds.), Copenhagen: Automatic Press, September 2009, 199-206.

94. Barry Smith, “Metaphysics”, *Metaphysics: Five Questions*, Asbjørn Steglich-Petersen (Ed.), Copenhagen: Automatic Press, July 2010, 143-158.
95. Werner Ceusters and Barry Smith, “Switching Partners: Dancing with the Ontological Engineers”, in Thomas Batcheler and Roderick Coover (Eds.), *Switching Codes. Thinking through Digital Technology in the Humanities and the Arts*, Chicago and London: University of Chicago Press, 2011, 103-124.
96. Barry Smith, “Preface”, in G. Sartor, et al. (Eds.), *Approaches to Legal Ontologies. Theories, Domains, Methodologies*, New York: Springer, 2011, p. 5.
97. Dipak Kalra, Mark Musen M, Barry Smith, Werner Ceusters, Georges De Moor, “ARGOS Policy Brief on Semantic Interoperability”, in: G. De Moor (Ed.), *Transatlantic Cooperation Surrounding Health Related Information and Communication Technology* (Studies in Health Technology and Informatics 170), 2011, 1-15.
98. Barry Smith and Wojciech Żelaniec, “Laws of Essence or Constitutive Rules? Reinach vs. Searle on the Ontology of Social Entities”, in *Eidetica del Diritto e Ontologia Sociale. Il Realismo di Adolf Reinach*, Francesca De Vecchi (Ed.), Milan: Mimesis, 2012, 83-108.
99. Barry Smith, Lowell Vizenor and Werner Ceusters, “Human Action in the Healthcare Domain: A Critical Analysis of HL7’s Reference Information Model” in C. Svennerlind, J. Almäng, R. Ingthorsson (Eds.), *Johanssonian Investigations. Essays in Honour of Ingvar Johansson on His Seventieth Birthday*, Berlin / New York: de Gruyter, 2013, 554-573.
100. Barry Smith, “Austrian and Hungarian Philosophy: On the Logic of Wittgenstein and Pauler”, in Anne Reboul (Ed.), *Mind, Values and Metaphysics. Philosophical Papers Dedicated to Kevin Mulligan*, Vol. 1, New York: Springer, 2014, 387-486.  
Hungarian translation as: “Osztrák és magyar filozófia: Wittgenstein és Pauler logikájáról”, *Századvég*, 17 (65), 2012, 5-30.
101. Barry Smith, “Document Acts”, in Anita Konzelmann Ziv and Hans Bernhard Schmid (Eds.), *Institutions, Emotions, and Group Agents. Contributions to Social Ontology*, Dordrecht: Springer, 2014, 19-31.
102. Barry Smith, “The Relevance of Philosophical Ontology to Information and Computer Science”, *Philosophy, Computing and Information Science*, Ruth Hagengruber and Uwe Riss (Eds.), London: Pickering and Chatto, 2014, 75-83.
103. Barry Smith, “Values in Contexts: An Ontological Theory”, *Inherent and Instrumental Values. Excursions in Value Inquiry*, G. John M. Abbarno (Ed.), Lanham, MD: University Press of America, 2015, 17-29.
104. Barry Smith, “Towards a Science of Emerging Media”, *Philosophy of Emerging Media: Understanding, Appreciation and Application*, edited by J. E. Katz and J. Floyd, Oxford: Oxford University Press, December 2015, 29-48.

## PAPERS IN CONFERENCE PROCEEDINGS

1. Barry Smith, “Wittgenstein and the Background of Austrian Philosophy”, in E. Leinfellner, et al. (Eds.), *Wittgenstein and His Impact on Contemporary Thought*, Vienna: Hölder-Pichler-Tempsky, Dordrecht: Reidel, 1978, 31–35.
2. Barry Smith, “On Tractarian Law”, in H. Berghele, et al. (Eds.), *Wittgenstein, the Vienna Circle and Critical Rationalism*, Vienna: Hölder-Pichler-Tempsky, Dordrecht: Reidel, 1979, 31–35.
3. Barry Smith, “On Making Sense of Ingarden”, in Maria Gołaszewska (Ed.), *Crisis of Aesthetics*, Cracow: Jagiellonian University, 1979, 283–289.
4. Barry Smith, “It”, in R. Haller and W. Grassl (Eds.), *Language, Logic and Philosophy*, Vienna: Hölder-Pichler-Tempsky, Dordrecht: Reidel, 1980, 342–345.
5. Barry Smith, “Some Formal Moments of Truth”, in W. Leinfellner, et al. (Eds.), *Language and Ontology*, Vienna: Hölder-Pichler-Tempsky, Dordrecht: Reidel, 1982, 186–190.
6. Barry Smith, “Acts and their Objects”, in P. Weingartner and H. Czermak (Eds.), *Epistemology and Philosophy of Science*, Vienna: Hölder-Pichler-Tempsky, Dordrecht: Reidel, 1983, 38–41.
7. Barry Smith, “Logical and Philosophical Remarks on Parts and Wholes”, in P. Sällström (Ed.), *An Inventory of Present Thinking about Parts and Wholes*, vol. I, Stockholm: Forskningsrådsnämnden, 1983, 123–128.
8. Barry Smith, “Reflections on Dependence”, in P. Sällström (Ed.), *An Inventory of Present Thinking about Parts and Wholes*, vol. II, Stockholm: Forskningsrådsnämnden, 1984, 29–42.

9. Barry Smith, “How not to talk about what does not exist”, in R. Haller (Ed.), *Aesthetics*, Vienna: Hölder-Pichler-Tempsky, Dordrecht: Reidel, 1984, 194–196.
10. Barry Smith, “On the Structures of Perceptual *Gestalten*”, in R. M. Chisholm, *et al.* (Eds.), *Philosophy of Mind. Philosophy of Psychology*, Vienna: Hölder-Pichler-Tempsky, 1985, 301–304.
11. Wolfgang Grassl and Barry Smith, “A Theory of Austria”, in J. C. Nyiri (Ed.), *From Bolzano to Wittgenstein: The Tradition of Austrian Philosophy*, Vienna: Hölder-Pichler-Tempsky, Dordrecht: Reidel, 1986, 11–30.
12. Barry Smith, “Wittgensteinian Philosophy and the Culture of the Commentary”, in R. Haller and J. Brandl (Eds.), *Wittgenstein: Towards a Re-Evaluation*, Vienna: Hölder-Pichler-Tempsky, 1990, vol. 2, 247–254.
13. “Thesen zur Nichtübersetzbarkeit der deutschen Philosophie”, in D. Papenfuss and O. Pöggeler (Eds.), *Zur philosophischen Aktualität Heideggers*, vol. 3, *Im Spiegel der Welt: Sprache, Übersetzung, Auseinandersetzung*, Frankfurt: Klostermann, 1992, 125–147.  
Russian translation: “К непереводимости немецкой философии”, *Logos*, 5 (6), 2000.
14. Barry Smith, “Über die Grenzen der Übersetzbarkeit”, in Armin Paul Frank, Kurt-Jürgen Maass, Fritz Paul and Horst Turk (Eds.), *Übersetzen. Verstehen. Brücken bauen. Geisteswissenschaftliches und literarisches Übersetzen im internationalen Kulturaustausch* (Göttinger Beiträge zur Internationalen Übersetzungsforschung, 8/1), Berlin/Bielefeld/Munich: Erich Schmidt Verlag, 1994, 295–301.
15. Barry Smith, “Philosophieren und Kommentieren: Überlegungen zu ihrem Verhältnis”, in H. F. Fulda and Rolf-Peter Horstmann (Eds.), *Vernunftbegriffe in der Moderne. Stuttgarter Hegel-Kongress 1993*, Stuttgart: Klett Cotta, 1994, 857–868.  
Shorter version as: “Worin unterscheiden sich deutsche und angelsächsische Philosophie?”, *Information Philosophie*, 2/1994, 30–38.
16. Barry Smith, “Fiat Objects”, in N. Guarino, L. Vieu and S. Pribbenow (Eds.), *Parts and Wholes: Conceptual Part-Whole Relations and Formal Mereology, 11th European Conference on Artificial Intelligence, Amsterdam, 8 August 1994*, Amsterdam: European Coordinating Committee for Artificial Intelligence, 1994, 15–23.
17. Barry Smith, “Topological Foundations of Cognitive Science”, in C. Eschenbach, C. Habel and B. Smith (Eds.), *Topological Foundations of Cognitive Science*, Hamburg: Graduiertenkolleg Kognitionswissenschaft, 1994, 3–22.  
Polish translation forthcoming.  
Danish translation as: “Kognitionsforskningens topologiske grundlag”, in Peer F. Bundgaard, Jesper Egholm & Martin Skov (Eds.), *Dynamisk semiotik. Kognition, sprog, ontologi*, Copenhagen: Gyldendal, 1999.
18. Barry Smith, “On Drawing Lines on a Map”, in Andrew U. Frank and Werner Kuhn (Eds.), *Spatial Information Theory. A Theoretical Basis for GIS* (Lecture Notes in Computer Science 988), Berlin/Heidelberg/New York, etc.: Springer, 1995, 475–484.
19. Barry Smith, “Towards an Ontology of Common Sense”, in Jaakko Hintikka and Klaus Puhl (Eds.), *The British Tradition in Twentieth-Century Philosophy*, Vienna: Hölder-Pichler-Tempsky, 1995, 300–309.
20. Barry Smith, “The Cognitive Geometry of War”, in Peter Koller and Klaus Puhl (Eds.), *Current Issues in Political Philosophy: Justice in Society and World Order*, Vienna: Hölder-Pichler-Tempsky, 1997, 394–403.  
French translation as: “La géométrie cognitive de la guerre”, in Bernard Baertschi and Kevin Mulligan (Eds.), *Les Nationalismes*, Paris, PUF, 2002, 199–226.  
Romanian translation in *Nationalisme*, Bucharest: Nemira, 2010
21. Barry Smith and Achille Varzi, “Fiat and Bona Fide Boundaries: Towards an Ontology of Spatially Extended Objects”, in S. C. Hirtle and A. U. Frank (Eds.), *Spatial Information Theory. International Conference COSIT '97. Laurel Highlands, Pennsylvania, October 1997* (Lecture Notes in Computer Science 1329), Berlin/New York: Springer Verlag, 103–119.
22. Barry Smith, “Basic Concepts of Formal Ontology”, in Nicola Guarino (Ed.), *Formal Ontology in Information Systems*, Amsterdam, Oxford, Tokyo, Washington, DC: IOS Press (Frontiers in Artificial Intelligence and Applications), 1998, 19–28.  
Polish translation as “Podstawowe pojęcia ontologii formalnej”, *Lectiones & Acroases Philosophicae*, 8, 2 (2015).
23. Roberto Casati, Barry Smith and Achille Varzi, “Ontological Tools for Geographic Representation”, in Nicola Guarino (Ed.), *Formal Ontology in Information Systems* Amsterdam, Oxford, Tokyo, Washington, DC: IOS Press (Frontiers in Artificial Intelligence and Applications), 1998, 77–85.  
“地理的表象のための存在論的ツール”, Japanese translation by Y. Yamashita, *InterCommunication*, 45, Summer 2003, 80–91.

24. Barry Smith and David M. Mark, "Ontology and Geographic Kinds", in T. Poiker and N. Chrisman (Eds.), *Proceedings of the 8th International Symposium on Spatial Data Handling (SDH '98)*, Vancouver: International Geographic Union, 1998, 308–320. Reprinted in Yaser Bishr and Werner Kuhn (Eds.), *The Role of Ontology in Modelling Geospatial Features*, Münster: Formatik, 1999.
25. Barry Smith, "Agglomerations", in C. Freksa, and David M. Mark (Eds.), *Spatial Information Theory. Cognitive and Computational Foundations of Geographic Information Science* (Springer Lecture Notes in Computer Science 1661), 1999, 267–282.
26. David Mark, Barry Smith and Barbara Tversky "Ontology and Geographic Objects: An Empirical Study of Cognitive Categorization," in C. Freksa and David M. Mark (Eds.), *Spatial Information Theory. Cognitive and Computational Foundations of Geographic Information Science* (Lecture Notes in Computer Science 1661), 1999, 283–298.
27. Barry Smith and Achille C. Varzi, "The Formal Structure of Ecological Contexts," in P. Bouquet, P. Brezillon, L. Serafini, M. Beneceretti, F. Castellani (Eds.), *CONTEXT '99: Modeling and Using Context. Proceedings of the Second International and Interdisciplinary Conference* (Lecture Notes in Artificial Intelligence, 1688), Berlin and Heidelberg: Springer-Verlag, 1999, 339–350.
28. David M. Mark, Barry Smith, Berit Brogaard-Pedersen, "Ontology of Common Sense Geographic Phenomena: Foundations for Interoperable Multilingual Geospatial Databases", 3rd AGILE Conference on Geographic Information Science – Helsinki/Espoo, Finland, May 25–27, 2000, 32–34.
29. Barry Smith, "On Forms of Communication in Philosophy", in *Proceedings of the 20th World Congress of Philosophy*, Volume X: *Philosophy of Science*, Editor: Tian Yu Cao, Bowling Green: Philosophy Documentation Center, 2001, 73–82.
30. Barry Smith and Achille C. Varzi, "Environmental Metaphysics", in U. Meixner (Ed.), *Metaphysics in the Post-Metaphysical Age. Proceedings of the 22nd International Wittgenstein-Symposium*, Vienna: öbv&hpt, 2001, 231–239. Japanese translation by S. Kajitani: "環境の形而上学" (Kankyo no Keijijyogaku), *理想 (The Riso/Risosha)* (Tokyo), 669, 2002, 170–180.
31. Barry Smith, "True Grid", in Daniel Montello (Ed.), *Spatial Information Theory. Foundations of Geographic Information Science, Proceedings of COSIT 2001*, Morro Bay, California, September 2001 (Lecture Notes in Computer Science 2205), Berlin/New York: Springer, 14–27. Revised version as: "Pictures, Maps and Other Cognitive Artifact", *Visio*, 6: 2-3, 2001, 163–176.
32. David M. Mark, Andre Skupin and Barry Smith, "Features, Objects, and Other Things: Ontological Distinctions in the Geographic Domain", in Daniel Montello (Ed.), *Spatial Information Theory. Foundations of Geographic Information Science, Proceedings of COSIT 2001*, Morro Bay, California, September 2001 (Lecture Notes in Computer Science 2205), Berlin/New York: Springer, 488–502.
33. Thomas Bittner and Barry Smith, "A Taxonomy of Granular Partitions", Daniel Montello (Ed.), *Spatial Information Theory. Foundations of Geographic Information Science, Proceedings of COSIT 2001*, Morro Bay, California, September 2001 (Lecture Notes in Computer Science 2205), Berlin/New York: Springer, 28–43.
34. Barry Smith and Christopher Welty, "Ontology: Towards a New Synthesis", editors' introduction to: Christopher Welty and Barry Smith (Eds.), *Formal Ontology in Information Systems*, New York: ACM Press, 2001, iii–ix.
35. Thomas Bittner and Barry Smith, "Granular Partitions and Vagueness" in Christopher Welty and Barry Smith (Eds.), *Formal Ontology in Information Systems*, New York: ACM Press, 2001, 309–321.
36. Wolfgang Degen, Barbara Heller, Heinrich Herre and Barry Smith, "GOL: A General Ontological Language", in Christopher Welty and Barry Smith (Eds.), *Formal Ontology in Information Systems*, New York: ACM Press, 2001, 34–46.
37. Barry Smith and Leo Zaibert, "The Metaphysics of Real Estate", in Christoph Schlieder, Erik Stubkjaer and Heiner Stuckenschmidt (Eds.), *Von der Theorie zur Praxis: Entwicklung und Transfer von Informatik-Technologien. Papers of the Kick-Off Meeting of the COST Action G9 "Modeling Real-Property Transactions"*, Bremen, Nov. 1-3, 2001, University of Bremen, Fachbereich Mathematik/Informatik, 2001, 19–21.
38. Maureen Donnelly and Barry Smith "Layers: A New Approach to Locating Objects in Space", in W. Kuhn, M. F. Worboys, and S. Timpf (Eds.), *Spatial Information Theory: Foundations of Geographic Information Science* (Lecture Notes in Computer Science 2825), Berlin: Springer, 2003, 50–65.
39. Daniel Cohnitz and Barry Smith, "Assessing Ontologies: The Question of Human Origins and Its Ethical Significance", in C. Kanzian and E. Runggaldier (Eds.), *Persons: An Interdisciplinary Approach*, Vienna: hpt&öbv, 2003, 243–59.

40. Anand Kumar and Barry Smith “Ontology for Task-Based Clinical Guidelines and the Theory of Granular Partitions”, *Proceedings of the 9th Conference on Artificial Intelligence in Medicine* (Lecture Notes on Artificial Intelligence 2780), Berlin: Springer, 2003, 71–75.
41. Barry Smith, Igor Papakin and Katherine Munn, 2003, “Bodily Systems and the Modular Structure of the Human Body”, *Proceedings of the 9th Conference on Artificial Intelligence in Medicine* (Lecture Notes on Artificial Intelligence 2780), Berlin: Springer, 2003, 86–90.
42. Werner Ceusters, Barry Smith and Jim Flanagan 2003, “Ontology and Medical Terminology: Why Description Logics Are Not Enough”, in *Proceedings of the Conference: Towards an Electronic Patient Record* (TEPR 2003), San Antonio 10-14 May 2003, Boston, MA: Medical Records Institute (CD-ROM publication).
43. Barry Smith, Jennifer Williams and Steffen Schulze-Kremer, 2003, “The Ontology of the Gene Ontology”, in *Biomedical and Health Informatics: From Foundations to Applications*, Proceedings of the Annual Symposium of the American Medical Informatics Association, Washington DC, November 2003, 609–613. PMC1480173
44. Anand Kumar and Barry Smith, 2003, “The Universal Medical Language System and the Gene Ontology: Some Critical Reflections”, in A. Günter, R. Kruse and B. Neumann (Eds.), *KI 2003: Advances in Artificial Intelligence* (Lecture Notes in Artificial Intelligence 2821), Berlin: Springer, 2003, 135–148.
45. Barry Smith, “Ontology in Biomedicine”, E. Papp, A. G. Beck-Sickinger and S. Eichler (Eds.), *2. Biotechnologie-Tag*, Leipzig: University of Leipzig, 2003, 294–296.
46. Anand Kumar and Barry Smith, “A Framework for Protein Classification”, *Proceedings of the 2003 German Conference on Bioinformatics*, Vol. II, 2003, 55–57.
47. Anand Kumar, Barry Smith, Mario Stefanelli, Silvana Quaglinia and Matteo Piazza, “Implementing Clinical Guidelines in an Organizational Setup”, *Proceedings of the Workshop on Model-Based and Qualitative Reasoning in Biomedicine*, AIME 2003, 39–44. See also supplementary paper here.
48. Thomas Bittner and Barry Smith, “Granular Spatio-Temporal Ontologies”, *AAAI Symposium: Foundations and Applications of Spatio-Temporal Reasoning* (FASTR), AAAI Press, 2003, 12–17.
49. David M Mark, Werner Kuhn, Barry Smith, Andrew G. Turk, “Ontology, natural language, and information systems: Implications of cross-linguistic studies of geographic terms”, *6th Annual Conference of the Association of Geographic Information Laboratories for Europe* (AGILE), 45-50.
50. Istvan-Tibor Nébel, Barry Smith, Ralf Paschke, “A User Profiling Component with the Aid of User Ontologies”, *Proceedings of Learning – Teaching – Knowledge – Adaptivity* (LLWA), University of Karlsruhe (2003).
51. Barry Smith, Jakob Köhler and Anand Kumar, “On the Application of Formal Principles to Life Science Data: A Case Study in the Gene Ontology”, in *Proceedings of DILS 2004 (Data Integration in the Life Sciences)*, (Lecture Notes in Bioinformatics 2994), Berlin: Springer, 2004, 79–94.
52. Werner Ceusters, Barry Smith and James Matthew Fielding, “LinkSuite™: Software Tools for Formally Robust Ontology-Based Data and Information Integration”, in *Proceedings of DILS 2004 (Data Integration in the Life Sciences)*, (Lecture Notes in Bioinformatics, 2994), Berlin: Springer, 2004, 124–139.
53. Werner Ceusters, Barry Smith and Martin Van Mol, “Using Ontology in Query Answering Systems: Scenarios, Requirements and Challenges,” in R. Bernardi and M. Moortgat (Eds.) *Questions and Answers: Theoretical and Applied Perspectives, Proceedings of the 2nd CoLogNET-Elsnet Symposium*, December 2003, Amsterdam, 5–15 (CD-ROM publication), (revised version to appear in *Journal of Applied Logic*).
54. Werner Ceusters, Barry Smith, Anand Kumar and Christoffel Dhaen, “Mistakes in Medical Ontologies: Where Do They Come From and How Can They Be Detected?”, in D. M. Pisanelli (Ed.), *Ontologies in Medicine: Proceedings of the Workshop on Medical Ontologies, Rome October 2003 (Studies in Health and Technology Informatics, 102 (2004))*, Amsterdam: IOS Press, 2004, 145–164.
55. Pierre Grenon, Barry Smith and Louis Goldberg, “Biodynamic Ontology: Applying BFO in the Biomedical Domain”, in D. M. Pisanelli (Ed.), *Ontologies in Medicine: Proceedings of the Workshop on Medical Ontologies, Rome October 2003 (Studies in Health and Technology Informatics, 102)*, Amsterdam: IOS Press, 2004, 20–38.
56. Barry Smith, Igor Papakin and Katherine Munn, “Bodily Systems and the Spatial-Functional Structure of the Human Body”, in D. M. Pisanelli (Ed.), *Ontologies in Medicine: Proceedings of the Workshop on Medical Ontologies, Rome October 2003 (Studies in Health and Technology Informatics, 102 (2004))*, Amsterdam: IOS Press, 2004, 39–63.

57. Anand Kumar, Paolo Ciccarese, Barry Smith and Matteo Piazza, "Context-Based Task Ontologies for Clinical Guidelines", in D. M. Pisanelli (Ed.), *Ontologies in Medicine: Proceedings of the Workshop on Medical Ontologies, Rome October 2003 (Studies in Health and Technology Informatics, 102 (2004))*, Amsterdam: IOS Press, 2004, 81–94.
58. Thomas Bittner and Barry Smith, "Directly Depicting Granular Ontologies", *Proceedings of the First International Workshop on Adaptive Multimedia Retrieval* (Hamburg: Gesellschaft für Künstliche Intelligenz, 2003), 24–35.
59. Anand Kumar, Barry Smith, Domenico M. Pisanelli, Aldo Gangemi and Mario Stefanelli, "An Ontological Framework for the Implementation of Clinical Guidelines in Health Care Organizations," in D. M. Pisanelli (Ed.), *Ontologies in Medicine: Proceedings of the Workshop on Medical Ontologies* (Rome October 2003), Amsterdam: IOS Press, 2004, 95–107.
60. Werner Ceusters, Barry Smith, Anand Kumar and Christoffel Dhaen, "Ontology-Based Error Detection in SNOMED-CT", in M. Fieschi, et al. (Eds.), *Medinfo 2004*, Amsterdam: IOS Press, 482–486.
61. Barry Smith and Cornelius Rosse, "The Role of Foundational Relations in the Alignment of Biomedical Ontologies", in M. Fieschi, et al. (Eds.), *Medinfo 2004*, Amsterdam: IOS Press, 444–448.
62. Jonathan Simon, James Matthew Fielding and Barry Smith, "Using Philosophy to Improve the Coherence and Interoperability of Applications Ontologies: A Field Report on the Collaboration of IFOMIS and L&C", in Gregor Büchel, Bertin Klein and Thomas Roth-Berghofer (Eds.), *Proceedings of the First Workshop on Philosophy and Informatics. Deutsches Forschungszentrum für künstliche Intelligenz*, Cologne: 2004 (CEUR Workshop Proceedings 112), 65–72.
63. Anand Kumar and Barry Smith, "Towards a Proteomics Meta-Classification", *IEEE Fourth Symposium on Bioinformatics and Bioengineering*, Taichung, Taiwan. IEEE Press, 2004, 419–427.
64. James M. Fielding, Jonathan Simon, Werner Ceusters and Barry Smith, "Ontological Theory for Ontological Engineering: Biomedical Systems Information Integration", *Proceedings of the Ninth International Conference on the Principles of Knowledge Representation and Reasoning (KR2004)*, Whistler, BC, 2-5 June 2004, 114–120.
65. Olivier Bodenreider, Barry Smith, Anand Kumar and Anita Burgun, "Investigating Subsumption in DL-Based Terminologies: A Case Study in Snomed-CT", in U. Hahn, S. Schulz and R. Cornet (Eds.), *Proceedings of the First International Workshop on Formal Biomedical Knowledge Representation (KR-MED 2004)*, 12–20.
66. Anand Kumar, Barry Smith and Christian Borgelt, "Dependence Relationships between Gene Ontology Terms based on TIGR Gene Product Annotations", *Proceedings of CompuTerm 2004: 3rd International Workshop on Computational Terminology*, Sophia Ananadiou and Pierre Zweigenbaum (Eds.), Geneva: Coling, 31–38.
67. Barry Smith and Christiane Fellbaum, "Medical WordNet: A New Methodology for the Construction and Validation of Information Resources for Consumer Health", *Proceedings of Coling: The 20th International Conference on Computational Linguistics*, Geneva 23-27 August 2004, 371–382.
68. Olivier Bodenreider Barry Smith and Anita Burgun, "The Ontology-Epistemology Divide: A Case Study in Medical Terminology", Achille Varzi and Laure Vieu (Eds.), *Formal Ontology in Information Systems. Proceedings of the Third International Conference (FOIS 2004)*, Amsterdam: IOS Press, 2004, 185–195.
69. Barry Smith, "Beyond Concepts, or: Ontology as Reality Representation", Achille Varzi and Laure Vieu (Eds.), *Formal Ontology in Information Systems. Proceedings of the Third International Conference (FOIS 2004)*, Amsterdam: IOS Press, 2004, 73–84.
70. Fabian Neuhaus, Pierre Grenon and Barry Smith, "A Formal Theory of Substances, Qualities, and Universals", Achille Varzi and Laure Vieu (Eds.), *Formal Ontology in Information Systems. Proceedings of the Third International Conference (FOIS 2004)*, Amsterdam: IOS Press, 2004, 49–58.
71. Thomas Bittner, Maureen Donnelly and Barry Smith, "Individuals, Universals, Collections: On the Foundational Relations of Ontology", in Achille Varzi and Laure Vieu (Eds.), *Formal Ontology in Information Systems. Proceedings of the Third International Conference (FOIS 2004)*, Amsterdam: IOS Press, 2004, 37–48.
72. Thomas Bittner and Barry Smith, "Normalizing Medical Ontologies Using Basic Formal Ontology", *Kooperative Versorgung, Vernetzte Forschung, Ubiquitäre Information*, Proceedings of GMDS 2004, Niebüll: Videel OHG, 199–201.
73. Barry Smith, "Ontologie-basierte Qualitätssicherung medizinischer Terminologien", *Kooperative Versorgung, Vernetzte Forschung, Ubiquitäre Information*, Proceedings of GMDS 2004, Niebüll: Videel OHG, 193–195.
74. Lowell Vizenor and Barry Smith, "The Ontological Nexus between Speech Acts and Medical Records", *Proceedings of the International Joint Meeting EuroMISE 2004*, Jana Zvarova, et al. (Eds.), Prague, EuroMISE 2004, p.61. Expanded version.

75. James Mathew Fielding, Jonathan Simon and Barry Smith, “Reference Ontologies for Biomedical Ontology Integration and Natural Language Processing”, *Proceedings of the International Joint Meeting EuroMISE 2004*, Jana Zvarova, et al. (Eds.), Prague, EuroMISE 2004, 62.
76. Barry Smith, “The Logic of Biological Classification and the Foundations of Biomedical Ontology”, in Petr Hájek, Luis Valdés-Villanueva and Dag Westerståhl (Ed.), *Logic, Methodology and Philosophy of Science. Proceedings of the 12th International Conference*, London: King’s College Publications, 2005, 505–520.
77. Anand Kumar and Barry Smith, “Enhancing GO for the Sake of Clinical Bioinformatics”, *Proceedings of Bio-Ontologies Workshop, Intelligent Systems for Molecular Biology (ISMB 2004)*, Glasgow, July 30.
78. Barry Smith and Anand Kumar, “On the Proper Treatment of Pathologies in Biomedical Ontologies”, *Proceedings of Bio-Ontologies Workshop, Intelligent Systems for Molecular Biology (ISMB 2005)*, Detroit, 22–23.
79. Barry Smith, “Against Fantology”, in Johann C. Marek and Maria E. Reicher (Eds.), *Experience and Analysis*, Vienna: HPT&ÖBV, 2005, 153–170.
80. Anand Kumar and Barry Smith, “Oncology Ontology in the NCI Thesaurus”, *AIME 2005 (Artificial Intelligence in Medicine Europe)*, (Lecture Notes in Computer Science 3581), 213–220.
81. Barry Smith, Werner Ceusters and Rita Temmerman, “Wüsteria”, *Medical Informatics Europe (MIE 2005)*, Geneva, *Studies in Health Technology and Informatic*, 116 (2005), 647–652.
82. Werner Ceusters and Barry Smith, “Tracking Referents in Electronic Health Records”, *Medical Informatics Europe (MIE 2005)*, Geneva, *Studies in Health Technology and Informatics* 116 (2005), 71–76.
83. Anand Kumar, Y. Lina Yip, Barry Smith, Dirk Marwede and Daniel Novotny, “An Ontology for Carcinoma Classification for Clinical Bioinformatics”, *Medical Informatics Europe (MIE 2005)*, *Stud Health Technol Inform.* 2005;116:635-40.
84. Louis J. Goldberg, Werner Ceusters, John Eisner and Barry Smith, “The Significance of SNODENT”, *Medical Informatics Europe (MIE 2005)*, Geneva, *Studies in Health Technology and Informatics*, vol. 116, 2005, 737–742.
85. Barry Smith, Jose L.V. Mejino Jr., Stefan Schulz, Anand Kumar and Cornelius Rosse, “Anatomical Information Science”, in A. G. Cohn and D. M. Mark (Eds.), *Spatial Information Theory. Proceedings of COSIT 2005* (Lecture Notes in Computer Science 3693), Berlin/Heidelberg/New York: Springer, 149–164.
86. Stephan Schulz, Philipp Daumke, Barry Smith and Udo Hahn, “How to Distinguish Parthood from Location in Bioontologies”, *Proceedings of the AMIA Symposium 2005*, Washington DC, 669–673. PMC1560856
87. Barry Smith and Werner Ceusters, “An Ontology-Based Methodology for the Migration of Medical Terminologies to Electronic Health Records”, *Proceedings of AMIA Symposium 2005*, Washington DC, 704–708. PMC1560617
88. Cornelius Rosse, Anand Kumar, Jose Leonardo V. Mejino, Daniel L. Cook, Landon T. Detwiler and Barry Smith, “A Strategy for Improving and Integrating Biomedical Ontologies”, *Proceedings of AMIA Symposium 2005*, Washington DC, 639–643. PMC1560467
89. Werner Ceusters and Barry Smith, “Requirements for natural language understanding in referent-tracking based electronic health records”, *Computer Science and IT with/for Biology*, C. Maria Keet and Enrico Franconi (Eds.), Free University of Bolzano, 2005, 43-46.
90. Barry Smith and Werner Ceusters, “HL7 RIM: An Incoherent Standard” (MIE 2006), *Studies in Health Technology and Informatics*, vol. 124, 133–138. (This issue also published as *Ubiquity: Technologies for Better Health in Aging Societies. Proceedings of MIE2006*, edited by Arie Hasman, Reinhold Haux, Johan van der Lei, Etienne De Clercq, Francis Roger-France, Amsterdam: IOS Press, 2006.)
91. Werner Ceusters, Peter Elkin and Barry Smith “Referent Tracking: The Problem of Negative Findings” (MIE 2006), *Studies in Health Technology and Informatics*, vol. 124, 741–6. (This issue also published as *Ubiquity: Technologies for Better Health in Aging Societies. Proceedings of MIE2006*, edited by Arie Hasman, Reinhold Haux, Johan van der Lei, Etienne De Clercq, Francis Roger-France, Amsterdam: IOS Press, 2006.)
92. Werner Ceusters and Barry Smith, “A Realism-Based Approach to the Evolution of Biomedical Ontologies”, *Proceedings of the Annual AMIA Symposium*, Washington DC, 2006, 121-125. PMC1839444

- 
93. Barry Smith, "Against Idiosyncrasy in Ontology Development", in B. Bennett and C. Fellbaum (Eds.), *Formal Ontology in Information Systems* (FOIS 2006), Amsterdam: IOS Press, 2006, 15-26.  
Russian translation
  94. Barry Smith, Waclaw Kusnierczyk, Daniel Schober, Werner Ceusters, "Towards a Reference Terminology for Ontology Research and Development in the Biomedical Domain", O. Bodenreider, Ed., *Proceedings of KR-MED* (CEUR, 222), 2006, 57-66.
  95. Darren A. Natale, Cecilia N. Arighi, Winona Barker, Judith Blake, Ti-Cheng Chang, Zhangzhi Hu, Hongfang Liu, Barry Smith, and Cathy H. Wu, "Framework for a Protein Ontology", *Proceedings of the 1st International Workshop on Text Mining in Bioinformatics*, 2006, 29-36. Journal version.
  96. Barry Smith, "On Place and Space: The Ontology of the Eruv", in C. Kanzian (Ed.), *Cultures: Conflict – Analysis – Dialogue*, Frankfurt: Ontos Verlag, 2007, 403-416.
  97. Ceusters W, Smith B. "Referent Tracking and its Applications", *Proceedings of the Workshop WWW2007 Workshop i<sup>3</sup>: Identity, Identifiers, Identification (Workshop on Entity-Centric Approaches to Information and Knowledge Management on the Web)*, Banff, Canada, May 8, 2007, <http://ceur-ws.org/Vol-249/>.
  98. Blake J, Hill DP, Smith B. "Gene Ontology annotations: What they mean and where they come from", *Proceedings of the Bio-Ontologies Workshop*, ISMB/ECCB, Vienna, July 20, 2007, 79-82. Journal version.
  99. Daniel Schober, Waclaw Kusnierczyk, Suzanna E Lewis, Jane Lomax, Members of the MSI, PSI Ontology Working Groups, Chris Mungall, Philippe Rocca-Serra, Barry Smith and Susanna-Assunta Sansone, "Towards naming conventions for use in controlled vocabulary and ontology engineering", *Proceedings of the Bio-Ontologies Workshop*, ISMB/ECCB, Vienna, July 20, 2007, 87-90. Journal version.
  100. Werner Ceusters, Kent Spackman and Barry Smith, "Would SNOMED-CT Benefit from Realism-Based Ontology Evolution?", *Proceedings of the Annual Symposium of the American Medical Informatics Association*, Chicago, IL, 2007, 105-109. PMC2655780
  101. Ron Rudnicki, Werner Ceusters, Shahid Manzoor and Barry Smith, "What Particulars are Referred to in EHR Data? A Case Study in Integrating Referent Tracking into an Electronic Health Record Application", *Proceedings of the Annual Symposium of the American Medical Informatics Association*, Chicago, IL, 2007, 630-634. PMC2655819.
  102. Terry Janssen, Herbert Basik, Mike Dean, Barry Smith, "A Multi-INT Semantic Reasoning Framework for Intelligence Analysis Support", *Proceedings of Ontology for the Intelligence Community, Columbia MD, November 2007*, 27-32.  
Repr. as "A Multi-INT Semantic Reasoning Framework for Intelligence Analysis Support", in: L. Obrst, T. Janssen, W. Ceusters (Eds.) *Ontologies and Semantic Technologies for the Intelligence Community* (Frontiers in Artificial Intelligence and Applications), Amsterdam: IOS Press, 2010, 57-69.
  103. Stefan Schulz, Holger Stenzhorn, Martin Boeker, Rudiger Klar, Barry Smith, "Clinical Ontologies Interfacing the Real World", *Third International Conference on Semantic Technologies (i-semantics 2007)*, Graz, Österreich, September 2007, 356-363.
  104. Mitsuhiro Okada, Barry Smith, and Yutaro Sugimoto, "Remarks on Logic for Process Descriptions in Ontological Reasoning: A Drug Interaction Ontology (DIO) Case Study", *InterOntology. Proceedings of the First Interdisciplinary Ontology Meeting*, Tokyo, Japan, 26-27 February 2008, 127-138.
  105. Barry Smith, "The Evaluation of Ontologies: Editorial Review vs. Democratic Ranking", *Proceedings of InterOntology 2008* (Tokyo, Japan, 26-27 February 2008), 127-138.
  106. Cecilia Arighi, Hongfang Liu, Darren Natale, Winona Barker, Harold Drabkin, Zhangzhi Hu, Judith Blake, Barry Smith and Cathy Wu, "TGF-beta Signaling Proteins and the Protein Ontology", *Proceedings of Bio-Ontologies Workshop*, Intelligent Systems for Molecular Biology (ISMB 2008), Toronto, 25-28. Journal version.
  107. Robert Arp and Barry Smith, "Function, Role, and Disposition in Basic Formal Ontology", *Proceedings of Bio-Ontologies Workshop*, Intelligent Systems for Molecular Biology (ISMB 2008), Toronto, 45-48.  
Revised version.
  108. Barry Smith, "Ontology (Science)", in C. Eschenbach and M. Grüninger (Eds.), *Formal Ontology in Information Systems. Proceedings of the Fifth International Conference (FOIS 2008)*, Amsterdam: IOS Press, 21-35.
  109. Richard H. Scheuermann, Werner Ceusters, and Barry Smith, "Toward an Ontological Treatment of Disease and Diagnosis", *Proceedings of the 2009 AMIA Summit on Translational Bioinformatics*, 2009, 116-120.
-



110. Werner Ceusters and Barry Smith, “What do Identifiers in HL7 Identify? An Essay in the Ontology of Identity”, *Proceedings of InterOntology 2009* (Tokyo, Japan, February 27-March 1, 2009), 77-86.
111. Werner Ceusters, Maria Capolupo, Barry Smith, Georges De Moor, “An Evolutionary Approach to the Representation of Adverse Events”, *Medical Informatics Europe* (MIE 2009), Sarajevo, *Stud Health Technol Inform*, 150, 537-541. PMC2829617
112. Bernd Blobel, Dipak Kalra, Marc Koehn, Ken Lunn, Peter Pharow, Pekka Ruotsalainen, Stefan Schulz, Barry Smith, “The Role of Ontologies for Sustainable, Semantically Interoperable and Trustworthy EHR Solutions”, *Medical Informatics Europe* (MIE 2009), Sarajevo, *Stud Health Technol Inform*, 150, 953-957.
113. Barry Smith, Kristo Miettinen and William Mandrick, The Ontology of Command and Control, *Proceedings of the 14th International Command and Control Research and Technology Symposium* (ICCRTS), Washington DC, Jun 15-17, Arlington, VA: The Command and Control Research Program, 2009.
114. Albert Goldfain, Lindsay G. Cowell, Barry Smith, “Towards an Ontological Representation of Resistance: The Case of MRSA”, *ICBO 2009: Proceedings of the First International Conference on Biomedical Ontology*, 61-64.
115. Barry Smith, Lowell Vizenor and James Schoening, “Universal Core Semantic Layer”, *Ontology for the Intelligence Community*, Proceedings of the Third OIC Conference, George Mason University, Fairfax, VA, October 2009, CEUR Workshop Proceedings, vol. 555.
116. Shahid Manzoor, Werner Ceusters and Barry Smith, “Referent Tracking for Command and Control Messaging Systems”, *Proceedings of Ontology for the Intelligence Community*, George Mason University, Fairfax, VA, October 2009, CEUR Workshop Proceedings, vol. 555.
117. Werner Ceusters and Barry Smith, “Malaria Diagnosis and the Plasmodium Life Cycle: The BFO Perspective”, in *Interdisciplinary Ontology. Proceedings of the Third Interdisciplinary Ontology Meeting* (Tokyo, Japan, February 27-28, 2010), Tokyo: Keio University Press, 2010, 25-34.
118. Werner Ceusters and Barry Smith, “A Unified Framework for Biomedical Terminologies and Ontologies”, *Proceedings of Medinfo 2010*, Cape Town, South Africa, Amsterdam: IOS Press, 12-15 September 2010 (*Studies in Health Technology and Informatics* 2010, 160) 1050-1054. PMC3104298
119. Albert Goldfain, Barry Smith and Lindsay G. Cowell, “Dispositions and the Infectious Disease Ontology”, in Antony Galton and Riichiro Mizoguchi (Eds.), *Formal Ontology in Information Systems. Proceedings of the Sixth International Conference (FOIS 2010)*, Amsterdam: IOS Press, 2010, 400-413.
120. Kerry Trentelman, Barry Smith, “An Axiomatisation of Basic Formal Ontology with Projection Functions”, *Advances in Ontologies, Proceedings of the Sixth Australasian Ontology Workshop (AOW 2010)*, Adelaide, 7 December 2010, Kerry Taylor, Thomas Meyer and Mehmet Orgun (Eds.), 2010, Sydney: ACS, 71-80.
121. Barry Smith, Werner Ceusters, Louis J. Goldberg, Richard Ohrbach, “Towards an Ontology of Pain”, in Mitsu Okada (Ed.), *Proceedings of the Conference on Ontology and Analytical Metaphysics*, February 24-25, 2011, Tokyo: Keio University Press, 2011, 23-36.  
Japanese translation: “痛みと痛み関連の現象のオントロジー (分類体系) に向けて (特集 痛むカラダ-当事者研究最前線)”, *現代思想* (Contemporary Thought), 39 (11), 2011, 172-180.  
Russian translation
122. Barry Smith, “The Ontology of Documents”, in Mitsu Okada (Ed.), *Proceedings of the Conference on Ontology and Analytical Metaphysics*, February 24-25, 2011, Tokyo: Keio University Press, 2011, 1-6.  
Russian translation
123. Janna Hastings, Werner Ceusters, Barry Smith, Kevin Mulligan, “Dispositions and Processes in the Emotion Ontology”, *Proceedings of the 2nd International Conference on Biomedical Ontology*, Buffalo, NY, July 28-30, 2011 (CEUR Workshop Proceedings, 833), 71-78.
124. Jobst Landgrebe, Barry Smith, “The HL7 Approach to Semantic Interoperability”, *Proceedings of the 2nd International Conference on Biomedical Ontology*, Buffalo, NY, July 28-30, 2011 (CEUR Workshop Proceedings, 833), 139-146.
125. Jiye Ai, Mauricio Almeida, Andre Andrade, Alan Ruttenberg, David T.W. Wong, Barry Smith, “Towards a Body Fluids Ontology: A Unified Application Ontology for Basic and Translational Science”, *Proceedings of the ICBO Workshop on Working with Multiple Biomedical Ontologies*, Buffalo, NY, July 26, 2011 (CEUR Workshop Proceedings, 833), 381-386.

126. Albert Goldfain, Barry Smith, Sivaram Arabandi, Mathias Brochhausen, William R. Hogan, "Vital Sign Ontology", *Proceedings of the Workshop on Bio-Ontologies*, ISMB, Vienna, June 2011, 71-74.
127. David Salmen, Tatiana Malyuta, Alan Hansen, Shaun Cronen, Barry Smith, "Integration of Intelligence Data through Semantic Enhancement", *Proceedings of the Conference on Semantic Technology in Intelligence, Defense and Security (STIDS)*, George Mason University, Fairfax, VA, November 16-17, 2011, CEUR, Vol. 808, 6-13.
128. Janna Hastings, Werner Ceusters, Barry Smith, Kevin Mulligan, "The Emotion Ontology: Enabling Interdisciplinary Research in the Affective Sciences", in *CONTEXT '11, The Seventh International and Interdisciplinary Conference on Modeling and Using Context*, Karlsruhe, Germany, September 26-30, 2011, Berlin/Heidelberg: Springer, 119-123.
129. Cecilia N. Arighi, Darren A. Natale, Judith A. Blake, Carol J. Bult, Michael Caudy, Alexander D. Diehl, Harold J. Drabkin, Peter D'Eustachio, Alexei Evsikov, Hongzhan Huang, Natalia V. Roberts, Alan Ruttenberg, Barry Smith, Jian Zhang, Cathy H. Wu, "Protein-Centric Connection of Biomedical Knowledge: Protein Ontology (PRO) Research and Annotation Tools", *Proceedings of the 2nd International Conference on Biomedical Ontology*, Buffalo, NY, July 28-30, 2011, 285-287.
130. Patricia L. Whetzel, Natasha Noy, Nigam Shah, Paul Alexander, Michael Dorf, Ray Ferguson, Margaret-Anne Storey, Barry Smith, Chris Chute, Mark Musen, "Bioportal: Ontologies and Integrated Data Resources at the Click of a Mouse", *Proceedings of the 2nd International Conference on Biomedical Ontology*, Buffalo, NY, July 28-30, 2011, 292-293.
131. Barry Smith, "On Classifying Material Entities in Basic Formal Ontology", in *Interdisciplinary Ontology: Proceedings of the Third Interdisciplinary Ontology Meeting*, Tokyo: Keio University Press, 2012, 1-13.
132. Janna Hastings, Nicolas Le Novère, Werner Ceusters, Kevin Mulligan and Barry Smith, "Wanting What We Don't Want to Want: Representing Addiction in Interoperable Bio-Ontologies", *Proceedings of the Third International Conference on Biomedical Ontology* (CEUR 897), Graz, July 23-25, 2012, 56-60.
133. Ramona Walls, Barry Smith, Justin Elser, Albert Goldfain, Dennis W. Stevenson and Pankaj Jaiswal, "A Plant Disease Extension of the Infectious Disease Ontology", *Proceedings of the Third International Conference on Biomedical Ontology* (CEUR 897), Graz, July 23-25, 2012, 1-5.
134. Albert Goldfain, Barry Smith and Lindsay Cowell, "Constructing a Lattice of Infectious Disease Ontologies from a Staphylococcus aureus Isolate Repository", *Proceedings of the Third International Conference on Biomedical Ontology* (CEUR 897), Graz, July 23-25, 2012.
135. Janna Hastings, Werner Ceusters, Mark Jensen, Kevin Mulligan and Barry Smith, "Representing Mental Functioning: Ontologies for Mental Health and Disease", *Towards an Ontology of Mental Functioning* (ICBO Workshop), *Third International Conference on Biomedical Ontology*, Graz, July 22, 2012.
136. Alexander P. Cox, Mark Jensen, William Duncan, Bianca Weinstock-Guttman, Kinga Szigeti, Alan Ruttenberg, Barry Smith and Alexander D. Diehl, "Ontologies for the Study of Neurological Disease", *Towards an Ontology of Mental Functioning* (ICBO Workshop), *Third International Conference on Biomedical Ontology*, Graz, July 22, 2012.
137. Janna Hastings, Werner Ceusters, Kevin Mulligan and Barry Smith, "Annotating affective neuroscience data with the Emotion Ontology", *Towards an Ontology of Mental Functioning* (ICBO Workshop), *Third International Conference on Biomedical Ontology*, Graz, July 22, 2012.
138. Barry Smith, Tatiana Malyuta, William S. Mandrick, Chia Fu, Kesny Parent, Milan Patel, "Horizontal Integration of Warfighter Intelligence Data. A Shared Semantic Resource for the Intelligence Community", *Proceedings of the Conference on Semantic Technology in Intelligence, Defense and Security (STIDS)*, George Mason University, Fairfax, VA, October 23-25, 2012, CEUR 996, 112-119.
139. Barry Smith, "Diagrams, Documents, and the Meshing of Plans", in: András Benedek and Kristóf Nyíri (Eds.), *How To Do Things With Pictures: Skill, Practice, Performance*, Frankfurt a. M.: Peter Lang Edition, 2013, 165-179.  
Italian translation as "Diagrammi, documenti e l'intrecciarsi dei piani d'azione" in Tiziana Andina and Carola Barbero (Eds.), *Ermeneutica, estetica, ontologia*, Bologna: Il Mulino, 2016, 249-266.
140. William R. Hogan, Mathias Brochhausen, Barry Smith, "A call to urgent action on standard ontologies for translational science", Presented at Translational Science 2013, Washington DC, April 18, 2013, *Clinical and Translational Science*, 6:2, 2013, 57
141. Albert Goldfain, Min Xu, Jonathan Bona and Barry Smith, "Ontology based annotation of contextualized vital signs", *Proceedings of the Fourth International Conference on Biomedical Ontology* (ICBO), Montreal, July 8-9, 2013, CEUR, vol. 1060, 28-33.

142. Barry Smith, “Introduction to the Logic of Definitions”, *International Workshop on Definitions in Ontologies*, organized in conjunction with the Fourth International Conference on Biomedical Ontology (ICBO), Montreal, July 7, 2013, CEUR, vol. 1061, 1-2.
143. Barry Smith, Tatiana Malyuta, Ron Rudnicki, William Mandrick, David Salmen, Peter Morosoff, Danielle K. Duff, James Schoening, Kesny Parent, “IAO-Intel: An Ontology of Information Artifacts in the Intelligence Domain”, *Proceedings of the Eighth International Conference on Semantic Technologies for Intelligence, Defense, and Security, Fairfax, VA* (STIDS 2013), CEUR, vol. 1097, 33-40.
144. Werner Ceusters, Chiun Yu Hsu and Barry Smith, “Clinical Data Wrangling Using Ontology and Referent Tracking”, *Proceedings of the Fifth International Conference on Biomedical Ontology (ICBO)*, Houston, 2014, (CEUR, 1327), 27-32.
145. Albert Goldfain, Barry Smith, Lindsay Cowell, “Ontological Representation of CDC Active Bacterial Core Surveillance Case Reports”, *Proceedings of the Fifth International Conference on Biomedical Ontology (ICBO)*, Houston, 2014, (CEUR, 1327), 74-77.
146. Selja Seppälä, Barry Smith and Werner Ceusters, “Applying the Realism-Based Ontology-Versioning Method for Tracking Changes in the Basic Formal Ontology”, *Formal Ontology in Information Systems. Proceedings of the Sixth International Conference (FOIS 2014)*, Amsterdam: IOS Press, 227-240.
147. Neil Otte, Brian Donohue and Barry Smith. “An Ontological Approach to Territorial Disputes”, *Proceedings of the Conference on Semantic Technology in Intelligence, Defense and Security* George Mason University, Fairfax, VA, (STIDS 2014), CEUR, vol. 1304, 2-9.
148. Erik Thomsen, Fred Read, William Duncan, Tatiana Malyuta and Barry Smith, “Ontological Support for Living Plan Specification, Execution and Evaluation”, *Proceedings of the Conference on Semantic Technology in Intelligence, Defense and Security*, George Mason University, Fairfax, VA, (STIDS 2014), CEUR, vol. 1304, 10-17.
149. Werner Ceusters and Barry Smith, “Biomarkers in the Ontology for General Medical Science”, *Digital Healthcare Empowering Europeans*, R. Cornet et al. (Eds.), Amsterdam: IOS Press, 2015, 155-159.
150. Werner Ceusters and Barry Smith, “Aboutness: Towards Foundations for the Information Artifact Ontology”, *Proceedings of the Sixth International Conference on Biomedical Ontology (ICBO)*, Lisbon, Portugal (CEUR 1515), 2015, 1-5.
151. Jingshan Huang, Karen Eilbeck, Judith Blake, Dejing Dou, Darren Natale, Alan Ruttenberg, Barry Smith, Michael Zimmermann, Guoqian Jiang, Yu Lin, Bin Wu, Yongqun He, Shaojie Zhang, Xiaowei Wang, He Zhang, David Schmitt, and Ming Tan, “A domain ontology for the non-coding RNA field”, *IEEE International Conference on Bioinformatics and Biomedicine (IEEE BIBM 2015)*, 621-624.
152. Jingshan Huang, Fernando Gutierrez, Dejing Dou, Judith Blake, Karen Eilbeck, Darren Natale, Barry Smith, Yu Lin, Xiaowei Wang, Zixing Liu, Bin Wu, Ming Tan and Alan Ruttenberg, “A semantic approach for knowledge capture of microRNA-target gene interactions,” *IEEE International Conference on Bioinformatics and Biomedicine (IEEE BIBM 2015)*, 975-982.
153. Peter Morosoff, Ron Rudnicki, Jason Bryant, Robert Farrell, Barry Smith, “Joint Doctrine Ontology: A Benchmark for Military Information Systems Interoperability”, *Semantic Technology for Intelligence, Defense and Security (STIDS)*, 2015, CEUR vol. 1523, 2-9.
154. Brian Donohue, Douglas Kutach, Amardeep Bhattal, Dave Braines, Geeth de Mel, Robert Ganger, Tien Pham, Ron Rudnicki and Barry Smith, “Controlled and Uncontrolled English for Ontology Editing”, *Semantic Technology for Intelligence, Defense and Security (STIDS)*, 2015, CEUR vol. 1523, 74-81
155. Francesco Furini, Rahul Rai, Giorgio Colombo, Barry Smith, Venkat Krovi, “Development of a Manufacturing Ontology for Functionally Graded Materials”, *Proceedings of International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC/CIE 2016)*, August 21-24, 2016, Charlotte, NC
156. Selja Seppälä, Alan Ruttenberg, Barry Smith, “The Functions of Definitions in Ontologies”, *Formal Ontology in Information Systems. Proceedings of the Ninth International Conference (FOIS 2016)*, Amsterdam: IOS Press, 2016, 37-50.
157. Niels Grewe, Ludger Jansen and Barry Smith, “Permanent Generic Relatedness and Silent Change”, *Formal Ontology in Information Systems. Proceedings of the Ninth International Conference (FOIS 2016) Ontology Competition*, (CEUR 1660), 1-5.
157. Alexander P. Cox, Christopher K. Nebelecky, Ronald Rudnicki, William A. Tagliaferri, John L. Crassidis, Barry Smith, “The Space Object Ontology”, *19th International Conference on Information Fusion (FUSION 2016)*, Heidelberg, Germany, July 5-8, 2016.
158. Fernanda Farinelli, Mauricio B. Almeida, Peter Elkin and Barry Smith, “OntONeo: The Obstetric and Neonatal Ontology”, Fernanda Farinelli, Mauricio Almeida, Peter Elkin, Barry Smith”, *International Conference on Biological Ontology (ICBO)*, CEUR 1747, 2016.

- 
159. Fernanda Farinelli, Mauricio B. Almeida, Peter Elkin and Barry Smith, “Dealing with elements of medical encounters: an approach based on ontological realism”, *International Conference on Biological Ontology*(ICBO), CEUR 1747, 2016.
  160. Laurel Cooper, Austin Meier, Justin Elser, Justin Preece, Xu Xu, Ryan Kitchen, Botong Qu, Eugene Zhang, Sinisa Todorovic, Pankaj Jaiswal, Marie-Angélique Laporte, Elizabeth Arnaud, Seth Carbon, Chris Mungall, Barry Smith, Georgios Gkoutos and John Doonan, “The Planteome Project”, *International Conference on Biological Ontology*(ICBO), CEUR 1747, 2016.
  161. William Duncan, Travis Allen, Jonathan Bona, Olivia Helfer, Barry Smith, Alan Ruttenberg and Alexander D. Diehl, “The ImmPort Antibody Ontology”, *International Conference on Biological Ontology*(ICBO), CEUR 1747, 2016.
  162. Barry Smith, Mark Jensen, “The UNEP Ontologies and the OBO Foundry”, *International Conference on Biological Ontology* (ICBO), CEUR 1747, 2016.

## REPORTS

1. Carola Eschenbach, Christopher Habel and Barry Smith (Eds.), *Topological Foundations of Cognitive Science*, Hamburg: Graduiertenkolleg Kognitionswissenschaft 1994, 194pp.
2. Barry Smith, *Foundations of Formal Geography*, Department of Geoinformation, Technical University of Vienna, 1995, 143pp.
3. Thomas Carroll and Barry Smith, *SUNY's Core Curricula: The Failure to Set Consistent and High Academic Standards*, New York: Empire Foundation for Policy Research, 1996, xiv + 34pp.
4. Donna Peuquet, Barry Smith and Berit O. Brogaard, *The Ontology of Fields: Report of the Specialist Meeting held under the auspices of the Varenius Project*, Bar Harbor, Maine, June 1998, Santa Barbara: NCGIA, vi + 42pp.
5. David Mark, Max Egenhofer, Stephen Hirtle and Barry Smith, *UCGIS Emerging Research Theme: Ontological Foundations for Geographic Information Science* (University Consortium for Geographic Information Science White Paper), 2000.
6. Wolfgang Degen, Barbara Heller, Heinrich Herre, Barry Smith, *GOL: Towards an Axiomatized Upper-Level Ontology*, IMISE, University of Leipzig, 2001.
7. Barbara Haller, Heinrich Herre, Barry Smith, “A Unified Framework for Building Ontological Theories with Application and Testing in the Field of Clinical Trials”, *Formal Ontology and Medical Information Science*, Report No. 2, University of Leipzig, 2001.
8. Thomas Bittner and Barry Smith, *Formal Ontologies for Space and Time*, IFOMIS Reports, 2003.
9. Werner Ceusters, Barry Smith, George De Moor, *Ontology-Based Integration of Medical Coding Systems and Electronic Patient Records*, IFOMIS Reports, 2004.
10. Barry Smith, Anand Kumar, Thomas Bittner, *Basic Formal Ontology for bioinformatics*, IFOMIS Reports, 2005.
11. Nicola Guarino and Barry Smith, *Engineering Ontologies: Foundations and Theories from Philosophy and Logical Theory, Semantic Interoperability and Data Mining in Biomedicine* (SemanticMining, European Union Network of Excellence 507505, Deliverable D.21.2), 2006.
12. L. Obrst, M. Musen, B. Smith, F. Neuhaus, F. Olken, M. Gruninger, M. Raymond, P. Hayes, R. Sharma (Eds.), *Towards an Open Ontology Repository*. Communiqué. *Ontology Summit 2008*.
13. William Mandrick, James Schoening and Barry Smith, *Command and Control (C2) Core Extended to Net-Enabled Command Capability*, Briefing to Department of Defense (DoD) Net-Enabled Command Capability, September 14, 2009.
14. Bernard de Bono, Mathias Brochhausen, Sybo Dijkstra, Dipak Kalra, Stephan Keifer, Barry Smith, *Biomedical Terminologies and Ontologies: Enabling Biomedical Semantic Interoperability and Standards in Europe*, White Paper, ELSA (European Large Scale Action on Electronic Health) Consultation Meeting, September 29, 2009.
15. William Mandrick, James Schoening and Barry Smith, *NATO Briefing on Command and Control (C2) Core Ontology*, October 11, 2009.
16. Ron Rudnicki, James Schoening and Barry Smith, *Aligning Legacy Data Models using UCore-SL*, Department of Defense Briefing, November 2009.
17. James Schoening, William Mandrick and Barry Smith, *UCore and UCore Semantic Layer*. Briefing to US Army Training and Doctrine Command (TRADOC) HQ, November 9, 2009.
18. Barry Smith, James Schoening and Dan Brennan, *UCore 2.0 Change Request*, US Department of the Army, November 2009.

19. Werner Ceusters and Barry Smith, Semantic Interoperability in Healthcare: State of the Art in the US. A Position Paper with Background Materials, prepared for the European Union ARGOS Project: Transatlantic Observatory for Meeting Global Health Policy Challenges through ICT-Enabled Solutions, March 3, 2010.
20. Fabian Neuhaus and Barry Smith, Ontology Summit 2010 Communiqué: Creating the Ontologists of the Future, Gaithersburg, MD: National Institute for Standards and Technology, March 2010.
21. Mark Phillips, Barry Smith, Lowell Vizenor, Scott Streit, Independent Review of Emerging Semantic Web Technologies Supporting the Defense Training Environment, United States Joint Forces Command, Joint Warfighting Center, September 2010, 27 pp.
22. Mark Phillips, Barry Smith, Lowell Vizenor, Scott Streit, White Paper: Realizing the Next Generation Defense Training Environment (DTE) through Semantic Web Technologies and Best Practices, United States Joint Forces Command, Joint Warfighting Center, November 2010, 60pp.
23. Barry Smith, Suzanne Lewis, Judith Blake, Chris Mungall, *Disease Ontology: Report of the Scientific Advisory Board*, February 2011.

## POSTERS AND ABSTRACTS

1. Barry Smith, Anand Kumar and Steffen Schulze-Kremer, “Revising the UMLS Semantic Network,” in M. Fieschi, *et al.* (Eds.), *Medinfo 2004*, Amsterdam: IOS Press, 1700. Expanded version.
2. Lee Sam, Tara Borlawsky, Ying Tao, Jianrong Li, Barry Smith and Yves Lussier, “Information-Theoretic Classification of SNOMED Improves the Organization of Context-Sensitive Excerpts from Cochrane Reviews” (Poster), *Proceedings of the Annual Symposium of the American Medical Informatics Association*, Chicago, 2007, 645. PMC2655812
3. Yongqun He, Zuoshuang Xiang, Boyang Zhao, David States, Brian Athey, Gil Omenn, Steve Qin, Harry Mobley, Howard Rush, Lindsay Cowell, Barry Smith, “Vaccine Ontology Development and its Application on Vaccine Data Standardization and Exchange”, ISMB, Toronto, July 19-23, 2008.
4. Yongqun He, Lindsay Cowell, Alexander D. Diehl, Harry Mobley, Bjoern Peters, Alan Ruttenberg, Richard H. Scheuermann, Ryan R. Brinkman, Melanie Courtot, Chris Mungall, Zuoshuang Xiang, Fang Chen, Thomas Todd, Lesley Colby, Howard Rush, Trish Whetzel, Mark A. Musen, Brian D. Athey, Gilbert S. Omenn and Barry Smith. “VO: Vaccine Ontology”, *ICBO 2009: Proceedings of the First International Conference on Biomedical Ontology*, 2009, 164.
5. Patricia L. Whetzel, Nigam H. Shah, Natalya F. Noy, Benjamin Dai, Michael Dorf, Nicholas B. Griffith, Clement Jonquet, Cherie H. Youn, Adrien Coulet, Chris Callendar, Daniel L. Rubin, Barry Smith, Margaret-Anne Storey, Christopher G. Chute, and Mark A. Musen. BioPortal: Ontologies and Integrated Data Resources at the Click of a Mouse”, in *Bio-Ontologies: Knowledge in Biology, SIG*, Poster session, ISMB/ECCB, Stockholm, Sweden, July 2009.
6. Albert Goldfain, Lindsay Cowell and Barry Smith. “Clonal Complexes in Biomedical Ontologies”, *ICBO 2009: Proceedings of the First International Conference on Biomedical Ontology*, 2009, 168.
7. Patricia L Whetzel, Nigam H. Shah, Natalya F. Noy, Benjamin Dai, Michael Dorf, Nicholas Griffith, Clement Jonquet, Cherie Youn, Adrien Coulet, Chris Callendar, Barry Smith, Margaret-Anne Storey, Christopher G. Chute, Daniel L. Rubin and Mark A. Musen. “BioPortal: Ontologies and Integrated Data Resources at the Click of the Mouse”, *ICBO 2009: Proceedings of the First International Conference on Biomedical Ontology*, 2009, 197.
8. He Y, Cowell L, Diehl AD, Mobley H, Peters B, Ruttenberg A, Scheuermann RH, Xiang Z, Athey BD, Omenn GS, Smith B. “Development of the Community-based Vaccine Ontology (VO)”, *109th American Society of Microbiologists (ASM) General Meeting*. May 17-21, 2009, Philadelphia, PA, USA.
9. A. Patrice Seyed, Stuart C. Shapiro, and Barry Smith, “Integrating BFO with OntoClean: Towards a Method for Evaluating and Correcting Ontologies”, Presented at Formal Ontology in Information Systems, Toronto, May 11-14, 2010.
10. Ramona L. Walls, Laurel D. Cooper, Justin Elser, Dennis W. Stevenson, Barry Smith, Chris Mungall, Maria A. Gandolfo, Pankaj Jaiswal, “The Plant Ontology: A Common Reference Ontology for Plants”, *Proceedings of the Workshop on Bio-Ontologies*, ISMB, Boston, July, 2010.
11. Laurel D. Cooper, Justin Elser, Ramona Walls, Dennis W. Stevenson, Barry Smith, Chris Mungall, Maria A. Gandolfo, Pankaj Jaiswal, “The Plant Ontology: A Database for Plant Genomics”, *Plant Biology 2010*, Montreal, July 30-August 4, 2010, P14010.

12. Robert Williams, A. Keith Dunker, Barry Smith, Darren Natale, An OBO Foundry ontology for intrinsically disordered proteins, *Pacific Symposium on Biocomputing*, 2011, P835.
13. Mauricio Almeida, Anna Barbara Proietti, Jiye Ai, Barry Smith, “The Blood Ontology: An Ontology in the Domain of Hematology”, *Proceedings of the Second International Conference on Biomedical Ontology*, Buffalo, NY, July 28-30, 2011, (CEUR Workshop Proceedings, 833), 227-229.
14. Laurel Cooper, Ramona Walls, Justin Elser, Justin Preece, Barry Smith, Chris Mungall, Stefan A. Rensing, Manuel Hiss, Péter Szövényi, Daniel Lang, Maria A. Gandolfo, Dennis W. Stevenson, Pankaj Jaiswal, “Expanding the Plant Ontology: Linking Plant Anatomy and Development to Genomics Across Plant Taxa” (Abstract), *Plant Biology* 2011, Minneapolis, MI.
15. Ramona L. Walls, Laurel D. Cooper, Justin Elser, Chris Mungall, Neeral Beladia, Justin Preece, Maria A. Gandolfo, Dennis W. Stevenson, Barry Smith, Pankaj Jaiswal, “Using the Plant Ontology to improve the interoperability of genomic and phenomic data sets”, *Plant Genomes and Biotechnology: From Genes to Networks*, Cold Spring Harbor Laboratories, November 30-December 3, 2011.
15. Laurel Cooper, Ramona Walls, Justin L. Elser, Justin Preece, Barry Smith, Chris Mungall Marie A. Gandolfo, Dennis W. Stevenson, Pankaj Jaiswal, *The Plant Ontology: Linking Plant Anatomy and Development to Genomics Across Plant Taxa*, *Proceedings of Plant and Animal Genome XX*, San Diego, California, 2012.
16. Walls RL, Elser JL, Preece J, Smith B, Mungall CJ, Rensing S, Hiss M, Szövényi P, Lang D, Gandolfo MA, Stevenson DW, Jaiswal P, “Annotating Gene Expression in *Physcomitrella patens* using the Plant Ontology: Facilitating Cross-Taxa Comparisons”, *Proceedings of Plant and Animal Genome XX*, San Diego, California, 2012.
17. Alexander C. Yu, Barry Smith, Stanley Schwartz, “Formal and Computable Representations of Allergic Diseases in the Electronic Health Record: An Approach Based on the Ontology of General Medical Science”, 2012 Annual Meeting of the American College of Allergy, Asthma & Immunology (ACAAI), November 8-13, 2012, Anaheim, California (Poster).
18. Pankaj Jaiswal, Barry Smith, Ruth Bastow, Paul J. Kersey, Elizabeth Arnaud, Laurel Cooper, Christopher Rawlings, “A Resource for a Common Reference Ontology for Plants”, *Proceedings of Plant and Animal Genome XXI*, San Diego, CA, January 12, 2013 (Poster).
19. Brian Atkinson, Laurel Cooper, Laura Moore, Justin Preece, Justin Elser, Nikhil Lingutla, Sinisa Todorovic, Ramona Walls, Ruth Stockey, Gar Rothwell, Barry Smith, Maria A. Gandolfo, Dennis Stevenson, Pankaj Jaiswal, “Plant Ontology, A Controlled and Structured Plant Vocabulary for All Botanical Disciplines”, *Botany 2013*, New Orleans, July 17-21, 2013.
20. Mark Jensen, Alexander P. Cox, Barry Smith, Alexander D. Diehl, “Representing Disease Courses: An Application of the Neurological Disease Ontology to Multiple Sclerosis Typology”, *Proceedings of the Fourth International Conference on Biomedical Ontology (ICBO)*, Montreal, July 8-9, 2013, (CEUR, 1060), 121.
21. Jie Zheng, Marcelline R. Harris, Anna Maria Masci, Yu Lin, Alfred Hero, Barry Smith and Yongqun He, “OBSCS: The Ontology of Biological and Clinical Statistics”, *Proceedings of the Fifth International Conference on Biomedical Ontology (ICBO)*, Houston, 2014, (CEUR, 1327), 65.
22. Laurel D. Cooper, Justin Elser, Justin Preece, Elizabeth Arnaud, Dennis W Stevenson, Sinisa Todorovic, Eugene Zhang, Christopher J. Mungall, Barry Smith, Pankaj Jaiswal, “Common Reference Ontologies for Plant Biology: A Platform for Integrative Plant Genomics”, *Proceedings of Plant and Animal Genome XXII*, San Diego, CA, 2014 (Poster).
23. Pankaj Jaiswal, Laurel Cooper, Justin L. Elser, Austin Meier, Marie-Angélique Laporte, Christopher Mungall, Barry Smith, Ethan K. S. Johnson, Megan Seymour, Justin Preece, Xu Xu, Ryan S. Kitchen, Botong Qu, Eugene Zhang, Elizabeth Arnaud, Seth Carbon, Sinisa Todorovic and Dennis Wm. Stevenson, “Planteome: A resource for Common Reference Ontologies and Applications for Plant Biology”, *Proceedings of Plant and Animal Genome XXIV*, 2016.
25. Edison Ong, Zuoshuang Xiang, Jie Zheng, Barry Smith and Yongqun He, “Ontobull and BFOConvert: Web-based programs to support automatic ontology conversion”, *International Conference on Biological Ontology(ICBO)*, CEUR 1747, 2016.

## DATABASES AND ONTOLOGIES

1. Buffalo Norms for Geographic Categories, November 1999.
2. Basic Formal Ontology (BFO), May 2004.
3. Relation Ontology (RO), April 2006.
4. Common Anatomy Reference Ontology (CARO), September 2008.
5. Protein Ontology (PRO), with the University of Delaware, October 2009.
6. Infectious Disease Ontology (IDO), with Duke University, October 2009.
7. Information Artifact Ontology (IAO), November 2009
8. Ontology for General Medical Science (OGMS), November 2009.
9. Universal Core Semantic Layer (UCore SL), March 2010. Files: <http://ncor.buffalo.edu/ucore-sl/>
10. Biometrics Upper Ontology (US Army), March 2010.

## LETTERS TO THE EDITOR

1. “Derrida Degree: A Question of Honour”, Letter to *The Times* (London) of 9 May 1992 on the award by Cambridge University of an honorary degree to Jacques Derrida. Co-signatories: Hans Albert (University of Mannheim), David Armstrong (Sydney), Ruth Barcan Marcus (Yale), Keith Campbell (Sydney), Richard Glauser (Neuchâtel), Rudolf Haller (Graz), Massimo Mugnai (Florence), Kevin Mulligan (Geneva), Lorenzo Peña (Madrid), Willard van Orman Quine (Harvard), Wolfgang Röd (Innsbruck), Karl Schuhmann (Utrecht), Daniel Schulthess (Neuchâtel), Peter Simons (Salzburg), René Thom (Burs-sur-Yvette), Dallas Willard (Los Angeles), Jan Woleński (Cracow). Reprinted *inter alia* in: *Silenus Laughed* (Sydney), July 1992; *The Cambridge Review*, October 1992 (special issue on “The Derrida Affair”), p. 139-140; J. Derrida, *Points ... Interviews, 1974–1994*, Stanford: Stanford University Press, 1995, 419-421; translated in *La Stampa* (Milan), 12 May 1992.
2. Mark A. Musen, Suzanna Lewis and Barry Smith, “Wrestling with SUMO and bio-ontologies”, *Nature Biotechnology*, 24, 1 (2006), p. 21. PMC2768033
3. Field, Dawn, Morrison, Norman, Glockner, Frank Oliver, Kottmann, Renzo, Cochrane, Guy, Vaughan, Robert, Garrity, George, Cole, Jim, Hirschman, Lynette, Schriml, Lynn, Mizrachi, Ilene, Federhen, Scott, Schindel, David, Miller, Scott, Hebert, Paul, Ratnasingham, Sujeevan, Hanner, Robert, Amaral-Zettler, Linda, Sogin, Mitchell, Ashburner, Michael, Lewis, Suzanna, Smith, Barry, “Working together to put molecules on the map”, *Nature*, 453 (7198), June 2008, 978.
4. David Koepsell and Barry Smith, “Dealing with socially constructed concepts in an ontology”, *Journal of Empirical Research on Human Research Ethics*, Vol. 4, No. 2, June 2009, 75-6.
5. Barry Smith, Louis J. Goldberg, Alan Ruttenberg and Michael Glick, “Regarding Ontology and the Future of Dental Research Informatics”, *The Journal of the American Dental Association (JADA)*, January, 142 (1), 2011, 252-254.

## ENTRIES IN DICTIONARIES AND IN ENCYCLOPEDIAS

1. “Art”, in N. Ashford and S. Davies (Eds.), *A Dictionary of Conservative and Libertarian Thought*, London and New York: Routledge, 1991, 9–11, reprinted 2011.  
Spanish translation in: *Diccionario del Pensamiento Conservador y Liberal*, Buenos Aires: Ediciones Nueva Vision, 1992.
2. “Conservative Theory”, in N. Ashford and S. Davies (Eds.), *A Dictionary of Conservative and Libertarian Thought*, London and New York: Routledge, 1991, 49–51.  
Spanish translation in: *Diccionario del Pensamiento Conservador y Liberal*, Buenos Aires: Ediciones Nueva Vision, 1992.

3. “Nationalism”, in N. Ashford and S. Davies (Eds.), *A Dictionary of Conservative and Libertarian Thought*, London and New York: Routledge, 1991, 180–183.  
Spanish translation in: *Diccionario del Pensamiento Conservador y Liberal*, Buenos Aires: Ediciones Nueva Vision, 1992.
4. “Introduction” to Hans Burkhardt and Barry Smith (Eds.), *Handbook of Metaphysics and Ontology*, Munich/Philadelphia/Vienna: Philosophia, 1991, xix–xxiii.
5. “Naive Physics”, in Hans Burkhardt and Barry Smith (Eds.), *Handbook of Metaphysics and Ontology*, Munich/Philadelphia/Vienna: Philosophia, 1991, 585–586.
6. “Meinong and the Graz School”, in Hans Burkhardt and Barry Smith (Eds.), *Handbook of Metaphysics and Ontology*, Munich/Philadelphia/Vienna: Philosophia, 1991, 519–522.
7. “Sachverhalt”, Article in *Historisches Wörterbuch der Philosophie*, J. Ritter and K. Gründer (Eds.), Stuttgart and Basel: Schwabe, vol. 8, 1992, 1102–1113.  
Preprinted in: “Sachverhalt: eine begriffsgeschichtliche Untersuchung” (includes an extensive English summary), *Forschungsberichte und Mitteilungen des Forschungsinstituts Philosophie/Technik/Wirtschaft*, Universität Salzburg, 9 (1988), 41pp.
8. “Aristotelianism, apriorism, essentialism”, in P. Boettke (Ed.), *The Elgar Companion to Austrian Economics*, Cheltenham: Edward Elgar Publishing, 1994, 33–37.
9. “Brentano”, in J. Kim and E. Sosa (Eds.), *A Companion to Metaphysics*, Oxford: Blackwell, 1995, 61–63.
10. “Ingarden”, in J. Kim and E. Sosa (Eds.), *A Companion to Metaphysics*, Oxford: Blackwell, 1995, 241–242.
11. “Ontology”, in J. Kim and E. Sosa (Eds.), *A Companion to Metaphysics*, Oxford: Blackwell, 1995, 373–374.
12. “Realistic Phenomenology”, in L. Embree (Ed.), *Encyclopedia of Phenomenology*, Dordrecht/Boston/London: Kluwer, 1997, 586–590.
13. “Austria” in L. Embree (Ed.), *Encyclopedia of Phenomenology*, Dordrecht/Boston/London: Kluwer, 1997, 43–48.
14. “Gestalt Psychology” in Edward Craig (Ed.), *Routledge Encyclopedia of Philosophy*, London: Routledge 1998, vol. 4, 51–54.
15. “Reinach” in Edward Craig (Ed.), *Routledge Encyclopedia of Philosophy*, London: Routledge, 1998, vol. 8, 180–182.
16. “Axiology” in Edward Craig (Ed.), *Routledge Encyclopedia of Philosophy*, London: Routledge 1998, vol. 1, 271–273 (with Alan Watson).
17. “Witasek”, in Monika Betzler and Julian Nida-Rümelin (Eds.), *Ästhetik und Kunstphilosophie von der Antike bis zur Gegenwart in Einzeldarstellungen*, Stuttgart: Alfred Kröner Verlag, 1998, 821–824.
18. “Ingarden”, in Robert Audi (Ed.), *The Cambridge Dictionary of Philosophy*, Cambridge: Cambridge University Press, 1999, p. 437.
19. “Brentano”, in *MIT Encyclopedia of Cognitive Science*, Cambridge, MA: MIT Press, 1999, 94–95.
20. “Daubert”, in *Powszechna Encyklopedia Filozofii*, Lublin: Polskie Towarzystwo Tomasz z Akwinu, 2001, 415–418. English version.
21. Steffen Schulze-Kremer and Barry Smith, “Ontologies for the Life Sciences”, *Encyclopedia of Genetics, Genomics, Proteomics and Bioinformatics*, New York and London: John Wiley and Sons, vol. 4, 2005.
22. Barry Smith “John Searle”, *Les sciences humaines*, Ed. Patrick Savidan, Paris: Presses Universitaires de France, 2006, 1061–62.
23. James DuBois and Barry Smith, “Reinach”, *Stanford Encyclopedia of Philosophy*, 2008.
24. Barry Smith, “Biometaphysics”, *Routledge Companion to Metaphysics*, Robin Le Poidevin, et al. (Eds.), London and New York: Routledge, 2009, 537–544.

## TRANSLATIONS

1. Translation of Adolf Reinach, “On the Theory of the Negative Judgment”, in Barry Smith (Ed.), *Parts and Moments. Studies in Logic and Formal Ontology*, Munich: Philosophia, 1982, 315–377.
2. Translation of Adolf Reinach, “William James and Pragmatism”, in K. Mulligan (Ed.), *Speech Act and Sachverhalt. Reinach and the Foundations of Realist Phenomenology*, Dordrecht/Boston/Lancaster: Nijhoff, 1987, 291–298.



3. Franz Brentano, *Philosophical Investigations on Space, Time and the Continuum*, English translation by Barry Smith, London/Sydney: Croom Helm, 1988, xxiv + 202pp. Reprinted Abingdon/New York: Routledge, 2010. Reviewed by Jonathan Barnes, *Philosophy and Phenomenological Research*, 51 (2), 468-470.
4. Translation of Christian von Ehrenfels, "On 'Gestalt-Qualities'" and other writings on Gestalt theory, in Barry Smith (Ed.), *Foundations of Gestalt Theory*, Munich and Vienna: Philosophia, 1988, 82–123.
5. "A Note on Brentano's Terminology", translator's preface to Franz Brentano, *Philosophical Investigations on Space, Time and the Continuum*, London/Sydney: Croom Helm, 1988, xxii–xxiv.

## BIBLIOGRAPHIES

1. "Annotated Bibliography of Writings on Part-Whole Relations since Brentano", in Barry Smith (Ed.), *Parts and Moments. Studies in Logic and Formal Ontology*, Munich: Philosophia, 1982, 481–552.
2. "Addenda to: Annotated Bibliography of Writings on Part-Whole Relations since Brentano", in P. Sällström (Ed.), *An Inventory of Present Thinking about Parts and Wholes*, vol. III, Stockholm: Forskningsrådsnämnden, 1985, 74–86.
3. "Chronicle"/"Husserl Bibliography", cumulative bibliography of literature on and by Edmund Husserl, in *Husserl Studies*, triennially from issue 3/2, 1986 to 8/3, 1991.
4. "Adolf Reinach: An Annotated Bibliography", in K. Mulligan (Ed.), *Speech Act and Sachverhalt*, Dordrecht/Boston/Lancaster: Nijhoff, 1987, 299–332.
5. "Gestalt Theory and Its Reception: An Annotated Bibliography", in Barry Smith (Ed.), *Foundations of Gestalt Theory*, Munich and Vienna: Philosophia, 1988, 231–478.
6. "Bibliography" in Barry Smith and David W. Smith (Eds.), *The Cambridge Companion to Husserl*, Cambridge and New York: Cambridge University Press, 1995, 487–508.

## REVIEWS AND REVIEW ARTICLES

1. Roman Ingarden, *The Literary Work of Art* (Evanston 1973), *Journal of the British Society for Phenomenology*, 6 (1975), 141–144.
2. Reinhardt Grossmann, *Meinong* (London 1974), *Journal of the British Society for Phenomenology*, 4 (1976), 147–148.
3. Michael Dummett, *Truth and Other Enigmas* (London 1978), *Philosophischer Literaturanzeiger*, 32 (1979), 365–368 (in German).
4. Martin Heidegger, *Metaphysische Anfangsgründe der Logik* (Frankfurt 1978), *Annals of Science*, 36 (1979), 103–105.
5. Alexius Meinong, *Gesamtausgabe* (Graz 1971–79), *Annals of Science*, 36 (1979), 636–38. German version in *Philosophischer Literaturanzeiger*, 33 (1980), 236–240.
6. Jacques Derrida, *Edmund Husserl's 'Origins of Geometry.' An Introduction* (London 1979), *Annals of Science*, 36 (1979), 638–641.
7. R. M. Chisholm and R. Haller (Eds.), *Die Philosophie Franz Brentanos* (Amsterdam 1978), *Journal of the British Society for Phenomenology*, 11 (1980), 194–199.
8. Alexius Meinong, *On Objects of Higher Order and Husserl's Phenomenology* (M. L. Schubert-Kalsi (Ed.), The Hague 1978), *The Philosophical Quarterly*, 30 (1980), 252–254.
9. Edmund Husserl, *Aufsätze und Rezensionen 1890–1910* (The Hague 1979), *Philosophischer Literaturanzeiger*, 33 (1980), 313–315 (in German).
10. David Wiggins, *Sameness and Substance* (Oxford 1979), *History and Philosophy of Logic*, 2 (1981), 150–151.
11. Paul Gochet, *Outline of a Nominalist Theory of Propositions* (Dordrecht 1980), *Grazer Philosophische Studien*, 14 (1981), 216–217.
12. Edmund Husserl, *Phantasie, Bildbewußtsein, Erinnerung. Zur Phänomenologie der anschaulichen Vergegenwärtigung* (The Hague 1980), *Philosophischer Literaturanzeiger*, 35 (1982), 14–17 (in German).
13. Ludwig Landgrebe, *The Phenomenology of Edmund Husserl* (Ithaca 1981), *History and Philosophy of Logic*, 4 (1983), 111.

14. Roger Schmit, *Husserls Philosophie der Mathematik. Platonistische und konstruktivistische Momente in Husserls Mathematikbegriff* (Bonn 1981), *History and Philosophy of Logic*, 4 (1983), 230–234.
15. Kurt Lewin, *Wissenschaftstheorie I* (Bern/Stuttgart 1981), *History and Philosophy of Logic*, 4 (1983), 235–238.
16. “Phänomenologie und angelsächsische Philosophie” [Review article on recent publications in phenomenology], *Philosophischer Literaturanzeiger*, 37 (1984), 387–405.
17. Kevin Mulligan and Barry Smith, “Traditional vs. Analytic Philosophy” [Review article on E. Tugendhat, *Traditional and Analytic Philosophy*], *Grazer Philosophische Studien*, 21 (1984), 193–202.
19. Edmund Husserl, *Studien zur Arithmetik und Geometrie* (The Hague 1983), *History and Philosophy of Logic*, 5 (1985), 228–230.
20. P. Jaeger and R. Lütke (Eds.), *Distanz und Nähe. Reflexionen und Analysen zur Kunst der Gegenwart* (Würzburg 1983), *Journal of the British Society for Phenomenology*, 16 (1985), 320–322.
21. Harald Delius, *Self-Awareness: A Semantical Inquiry* (Munich 1981), *Philosophy and Phenomenological Research*, 46 (1985), 170–173.
22. J. N. Mohanty, *The Possibility of Transcendental Philosophy* (Dordrecht 1985), *Journal of the British Society for Phenomenology*, 18 (1987), 299–301.
23. Paul Gochet, *Ascent to Truth: A Critical Examination of Quine’s Philosophy* (Munich/Vienna 1986), *Grazer Philosophische Studien*, 30 (1987), 212–213.
24. J. Macnamara, *A Border Dispute. The Place of Logic in Psychology* (Cambridge, Mass. 1987), *History and Philosophy of Logic*, 9 (1988), 126–128.
25. R. Bernet, I. Kern and E. Marbach, *Edmund Husserl. Darstellung seines Denkens* (Hamburg, 1989), *History and Philosophy of Logic*, 11 (1990), 260.
26. Edmund Husserl, *Aufsätze und Vorträge (1911–21)* (Dordrecht 1987), *Journal of the British Society for Phenomenology*, 21 (1990), 293–295 (with K. Schuhmann).
27. L. B. Puntel, *Grundlagen einer Theorie der Wahrheit* (Berlin/New York 1990), *Philosophy and Phenomenological Research*, 52 (1992), 494–496.
28. Mark A. Notturmo, (Ed.) *Perspectives on Psychologism* (Leiden 1989), *History and Philosophy of Logic*, 12 (1991), 249–251.
29. Felix Kaufmann, *L’infinito in matematica* (Gardolo di Trento 1990), *History and Philosophy of Logic*, 13 (1992), 131.
30. “The Philosophy of Austrian Economics” [Review article on David Gordon, *The Philosophical Origins of Austrian Economics* (Auburn 1993)], *Review of Austrian Economics*, 7 (1994), 127–132.
31. Ernest Davis, *Representations of Commonsense Knowledge* (San Mateo 1990), *Minds and Machines*, 4/2 (1994), 245–249.
32. Kenneth J. Perszyk, *Nonexistent Objects: Meinong and Contemporary Philosophy* (Dordrecht/Boston/London 1993), *History and Philosophy of Logic*, 16 (1995), 154–155.
33. Werner Stelzner (Ed.), *Philosophie und Logik. Frege-Kolloquien Jena 1989/1991* (Berlin/New York 1993), *History and Philosophy of Logic*, 16 (1995), 155–156.
34. Edmund Husserl, *Briefwechsel* (10 volumes, Dordrecht/Boston/London 1994), *Husserl Studies*, 12 (1995), 98–104.
35. Arnold Heidsieck, *The Intellectual Contexts of Kafka’s Fiction: Philosophy, Law, Religion* (Columbia, SC 1994) in *Nachrichten der Forschungsstelle und des Dokumentationszentrums für Österreichische Philosophie*, 6 (1995), 47–49.
36. Gustav Bergmann, *New Foundations of Ontology* (Madison and London 1992), *Vienna Circle Institute Yearbook*, 3 (1995), Dordrecht: Kluwer, 304–306.
37. Aurel Kolnai, *The Utopian Mind* (London 1995), *Journal of the British Society for Phenomenology*, 27/2 (1996), 208–210.
38. Steven S. Pollard and Norman M. Martin, *Closure Spaces and Logic* (Dordrecht 1996), *History and Philosophy of Logic*, 17 (1996), 176–177.
39. Peter A. Burrough and Andrew U. Frank (Eds.), *Geographic Objects with Indeterminate Boundaries* (London and Bristol, PA. 1996), *Dialectica*, 55: 1 (2001), 72–74.

# Editorial Information

---

## AIMS AND SCOPE

COSMOS+TAXIS takes its name and inspiration from the Greek terms that F. A. Hayek famously invoked to connote the distinction between spontaneous orders and consciously planned orders.

COSMOS+TAXIS publishes papers on complexity broadly conceived in a manner that is accessible to a general multidisciplinary audience with particular emphasis on political economy and philosophy.

COSMOS+TAXIS publishes a wide range of content: refereed articles, unrefereed though moderated discussion articles, literature surveys and reviews.

COSMOS+TAXIS invites submissions on a wide range of topics concerned with the dilemma of upholding ethical norms while also being mindful of unintended consequences.

COSMOS+TAXIS is ecumenical in approaches to, and not committed to, any particular school of thought and is certainly not a talking shop for ideologues of any stripe.

COSMOS+TAXIS is not committed to any particular school of thought but has as its central interest any discussion that falls within the classical liberal tradition.

---

## SUBMISSIONS

COSMOS+TAXIS only accepts digital submissions:  
david@shanghaitech.edu.cn

Submitting an article to COSMOS+TAXIS implies that it is not under consideration (and has not been accepted) for publication elsewhere. COSMOS+TAXIS will endeavor to complete the refereeing process in a timely manner (i.e. a publication decision will be made available within three months).

Papers should be double-spaced, in 12 point font, Times New Roman. Accepted papers are usually about 6,000-8,000 words long. However, we are willing to consider manuscripts as long as 12,000 words (and even more under very special circumstances). All self-identifying marks should be removed from the article itself to facilitate blind review. In addition to the article itself, an abstract should be submitted as a separate file (also devoid of author-identifying information). Submissions should be made in Word doc format.

1. Submissions should be in English, on consecutively numbered pages. American, Canadian and UK spellings and punctuation are acceptable as long as they adhere consistently to one or the other pattern.
2. Citations should be made in author-date format. A reference list of all works cited should be placed at the end of the article.

The reference style is as follows:

Author, A. B. (2013). Title. *Journal*, 1(1): 1-10.

Author, C. D., Author, B., and Author, C. C. (2013). Article Title. in *Title*. City: Publisher, pp. 1-10.

Author, J. E. and Author, B. (Eds.) *Title*. City: Publisher, pp. 1-10.

Author, E. F. (2008). *Title*. Place: Publisher.

3. All notes should be as end notes.
4. No mathematical formulae in main text (but acceptable in notes or as an appendix).

Please consult the latest issue of COSMOS+TAXIS to see a fully detailed example of the Journal's elements of style.

## CONTACTS

COSMOS+TAXIS welcomes proposals for guest edited themed issues and suggestions for book reviews. Please contact the Editor-in-Chief to make a proposal:  
david@shanghaitech.edu.cn

All business issues and typesetting are done under the auspices of The University of British Columbia. Inquiries should be addressed to the Managing Editor: leslie.marsh@ubc.ca

<http://cosmosandtaxi.org>

Books for review should be sent to:

Laurent Dobuzinskis  
Department of Political Science  
Simon Fraser University  
AQ6069 - 8888 University Drive  
Burnaby, B.C.  
Canada V5A 1S6

Design and typesetting: Claire Roan, UBC Studios,  
Information Technology, University of British Columbia.



COSMOS + TAXIS