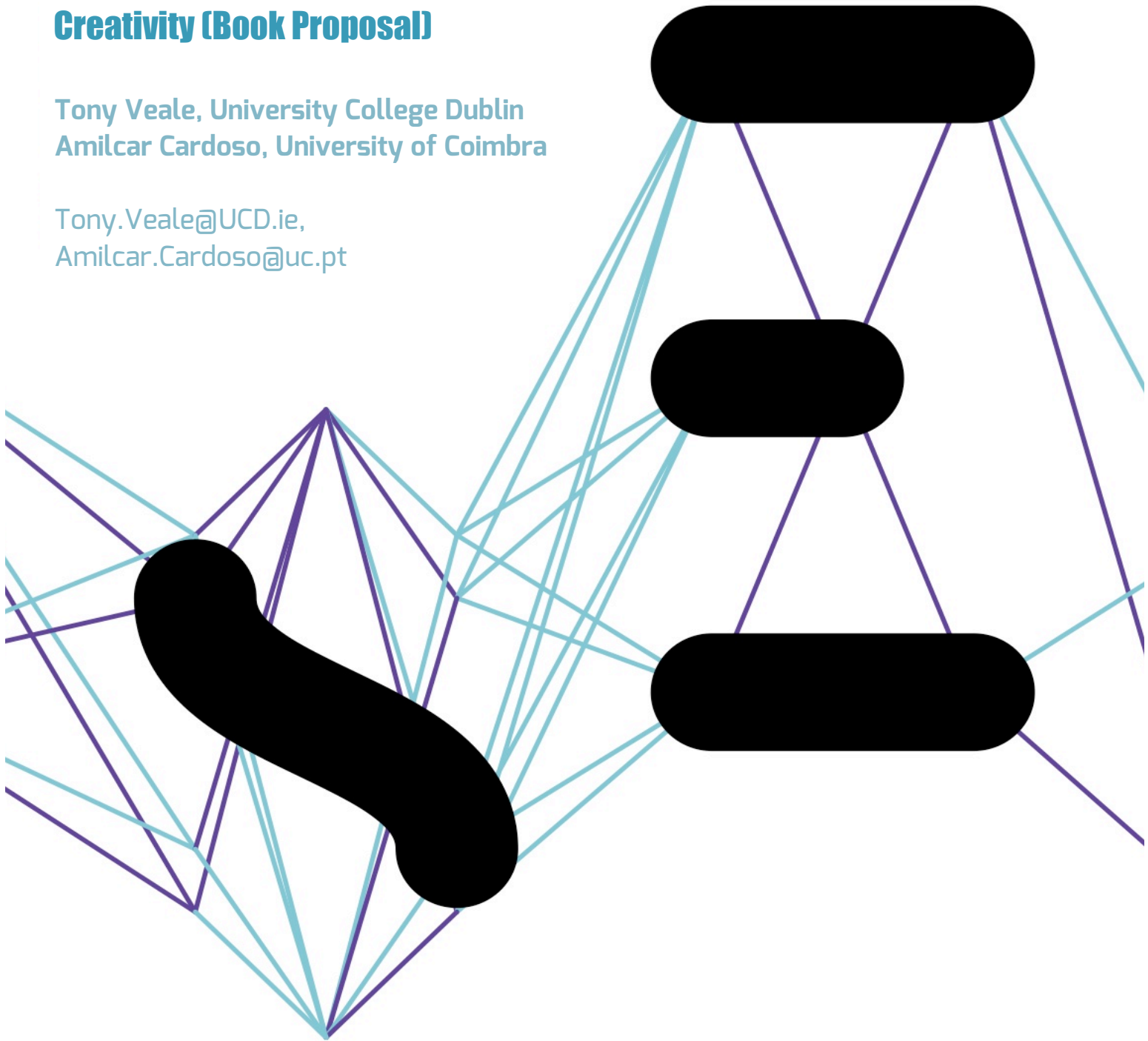


Deliverable: D4.3

Year 2 Readings in Computational Creativity (Book Proposal)

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1. Introduction

This deliverable concerns the proposed compendium of "canonical" papers in Computational Creativity, entitled *Readings in Computational Creativity*, that will serve as a primer for students and academics in other fields when they enter, or consider entering, the field of Computational Creativity. The text of this deliverable comprises the proposal made to the publisher Springer concerning this volume, as the text – using the official format of the publisher for such pitches – constitutes the best argument for the volume. We note that the proposal as outlined here has been officially accepted by Springer, and work is under way to deliver the volume to the publisher in 2016.

(A) Project Details

Please offer the author/editor names as they should appear on the book cover.

(i) **Author/Editor (both) Names:** Tony Veale and Amílcar Cardoso

(ii) **Book Title:** *Readings in Computational Creativity*

(iii) **Subtitle (if applicable):** An Introduction to the Science and Engineering of Creative Machines

(iv) **Appropriate Book Series (if applicable):** *Lecture Notes in Artificial Intelligence*

(v) **Planned Date of Submission:** March 1, 2016

(vi) **Planned Size of Manuscript (pp.):** approx. 350 pages

(B) Short Book Description

Please describe the book using 2–3 paragraphs, ca. 100 words – a text for use later on the book cover and websites, etc.

This generally follows a format of: (i) book context ("This field of research ..."); (ii) the actual content of the book ("The author presents chapters on ...") and notes about the treatment; and (iii) readership ("This book is useful for ...").

Computational Creativity (CC) is an emerging field of research within AI that focuses on the capacity of machines to both generate *and* evaluate novel outputs that would, if produced by a human, be considered creative. It is a field that has coalesced around its own community and its own research agenda. All new fields and disciplines benefit from a canonical text from which new researchers (whether students or researchers from other fields) can absorb the philosophy of the field, learn its methods and see what has already been done, and this book aims to be such a canonical text.

The proposed text will be a collection of much-revised and extended papers on Computational Creativity that were previously published elsewhere and which are representative of particular topics and positions within the field. These canonical papers have been referenced by others and proven their worth as introductions to a particular way of approaching or doing or evaluating CC.

The intended readership for this text is the growing body of student researchers who are attracted to research in CC and who seek an authoritative starting point for their studies. The book will also find readers amongst researchers in other areas of AI or Computer Science who want to know what this emerging field is all about.

(C) Table of Contents

Please offer a draft of at least the top-level headings.

Introduction to Computational Creativity: Targets, Themes and Trends

(a comprehensive introduction by the Editors)

Narrative / Story Generation: Pablo Gervas, Rafael Perez y Perez

Humour / Joke Generation: Graeme Ritchie, Carlo Strapparava

<i>Poetry Generation:</i>	Ruli Manurung
<i>Metaphor Generation:</i>	Tony Veale
<i>Image Generation:</i>	Simon Colton, Dan Ventura, Penousal Machado
<i>Music Generation:</i>	Geraint Wiggins, Amílcar Cardoso
<i>Automated Discovery:</i>	Nada Lavrac, Hannu Toivonen
<i>Automated Design:</i>	Kazjon Grace, Mary-Lou Maher, Rob Saunders
<i>Games and Ludic Computing:</i>	Mike Cook

(D) Author/Editor Details

(i) Details (Authors, Editors and Chapter Contributors) –

Full first names, full surnames (please discriminate using underlines), formal titles (Dr., Prof., etc.), affiliations, (physical) addresses, contact details (incl. e-mails and URLs).

Co-Editor:	Tony Veale	Google Scholar	Official Web Site
Co-Editor:	Dr. Amílcar <u>Cardoso</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Pablo <u>Gervas</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Rafael <u>Perez y Perez</u>		Official Web Site
Chapter Author:	Dr. Graeme <u>Ritchie</u>		Official Web Site
Chapter Author:	Dr. Carlo <u>Strapparava</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Ruli <u>Manurung</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Tony <u>Veale</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Simon <u>Colton</u>		Official Web Site
Chapter Author:	Dr. Dan <u>Ventura</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Geraint <u>Wiggins</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Amílcar <u>Cardoso</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Nada <u>Lavrac</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Hannu <u>Toivonen</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Mary-Lou <u>Maher</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Kazjon <u>Grace</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Rob <u>Saunders</u>	Google Scholar	Official Web Site
Chapter Author:	Dr. Penousal <u>Machado</u>	Google Scholar	Official Web Site
Chapter Author:	Mr. Mike <u>Cook</u>	Google Scholar	Official Web Site

(ii) **Outline CVs (Authors, Editors)** – Career notes, lists of related publications, reviews of these, etc. Please simply point to online sources if available. In the case of edited books, outline CVs of the editors only, not the chapter contributors.

Editors CVs (Tony Veale and Amílcar Cardoso)

Tony Veale received his Ph.D. in Computer Science, on the subject of Creative Language Processing, in Trinity College, Dublin in 1996. Since then, he has divided his career between academia and industry. In the latter, he has developed text-understanding and machine translation systems for Hitachi (in particular, the translation of English into American Sign language, ASL), as well as analogical reasoning tools for the CYC project in Cycorp at Austin, Texas, and patented web-based question-answering technology for Intelliseek (Cincinnati) and Coreintellect (Dallas), where he held the position of Chief Scientist. During his tenure on the CYC project in Cycorp, he developed a model of analogical reasoning for CYC and contributed to DARPA's High-Performance-Knowledge-Bases (HPKB) and Rapid-Knowledge-Formation (RKF) projects.

Veale is the author / co-author of over 120 research papers, and is author of the 2012 monograph *Exploding the Creativity Myth: The Computational Foundations of Linguistic Creativity* from Bloomsbury Academic. He is also the principal co-editor of a forthcoming multidisciplinary volume from Mouton, "*Creativity and the Agile Mind*", which arose from his fellowship at the Flemish Academy of Arts and Science (VLAC) in Brussels in 2008, where he was funded to research creativity in a multidisciplinary environment. He publishes widely in Computational Creativity, and the outputs of his research group can be found on their web-site, (<http://Afflatus.UCD.ie>). He has delivered multiple courses on creativity (both linguistic and computational) at ESSLLI (the European Summer Schools on Logic, Language and Information) and at the recent Autumn School in Computational Creativity in Helsinki (Nov. 2011). His research on linguistic creativity has been covered in *New Scientist* magazine and in various newspaper articles and radio science shows. Veale has co-edited two special journal issues on computational creativity, has co-organized the IJWCC (the precursor workshop series to

ICCC, the International Conference on Computational Creativity) multiple times, was local organizer of the ICCC 2012 event at UCD in Dublin and was general chair of ICCC 2013. Veale is the scientific coordinator of the EU coordination action on computational creativity, entitled PROSECCO (*Promoting the Scientific Exploration of Computational Creativity*), whose aim is the development of computational creativity as a mature academic discipline.

For 2011-2013 Veale was an invited professor of Linguistic Web Science at KAIST, the Korean institute of Advanced Science and Technology. Veale continues to promote Computational Creativity internationally via summer schools and tutorials at relevant conferences (such as at a recent tutorial on metaphor generation at EACL-2014, and a tutorial on Twitterbot-construction at ICCC-2014). Veale will teach computational creativity (with an emphasis on Twitterbots) at the University of Helsinki in Autumn 2014 and will co-organize a code-camp on Twitterbot construction for PROSECCO in 2015. He is the author of the web initiative *RobotComix.com*, which provides hundreds of pages of engaging content on computers and creativity for students and the public. He is also creator of the Twitterbot *@MetaphorMagnet*, which generates a novel and pithy metaphor for public consumption every hour on the hour.

Amílcar Cardoso, PhD, leads the Cognitive and Media Systems Group of CISUC, a team with 17 PhDs that performs research on Artificial Intelligence, Media Systems, Pervasive Systems and ICT for Education. He received his Habilitation in Informatics Engineering and his PhD in Engineering Sciences, both from the University of Coimbra (UC). He is a Full Professor at the Department of Informatics Engineering of the UC, where he teaches Artificial Intelligence, Cognitive Modeling, Computational Creativity, Computer Programming for Design and other topics. He has been President of CISUC (2008-2012) and currently coordinates the Doctoral Program in Information Science and Technology. He developed pioneering work on Computational Creativity in the 90's, as leader of the team that authored several creative systems (e.g., SICOM, NEvAr, MuzaCazUza), after assuming an active role in the establishment of a Computational Creativity community: he was the Chair of the Working Group on Computational Creativity of Action COST 282 (2001-2003), which promoted a series of meetings that spurred the formation of the core group of researchers that patronized the current CC community; he was co-founder of the series of "Creative Systems Workshops" co-located with important international conferences (2001-2006), being co-chair of the first three (ICCBR 2001, ECAI 2002 and IJCAI 2003); he was also co-chair of the 2002 edition of the symposium series on AI and Creativity co-located with AISB. Later on, in 2006, he was co-founder of the Steering Committee of the International Joint Workshop on Computational Creativity, and co-chaired the first edition of this series (2007, London, UK) that resulted from the merge of the previous two streams of events. In 2010, he was Local Chair of the first International Conference on Computational Creativity (Lisbon, Portugal). In 2015, he was Co-Chair of the 1st Code Camp on Computational Creativity (Coimbra, Portugal). Currently, he participates in the FET CA project PROSECCO as well as in the FET-Open project ConCreTe. He supervised four PhDs in the area, with themes ranging from concept invention to exploration of unknown spaces, evolutionary art and music information retrieval, and co-authored more than 120 articles, proceedings and a journal special issue on Computational Creativity. His research interests currently also extend to Affective Computing and Multi-Agent Systems, especially in contexts of creative systems, automatic music composition, social simulation and human-computer confluence. He has also been involved recently in collaborations with creative industries in Portugal, Spain and France, particularly within the QREN funded project RECARDI (National Network for Digital Art and Culture) and the Interreg IV/SUDOE funded project Transcreativa.

(E) Book Context

(i) Class – Is your book a research monograph, undergraduate or graduate/advanced textbook, state-of-the-art survey, reference book, etc.?

The proposed edited volume will be both a state-of-the-art survey and canonical reference book on a relatively new and emerging field. Though not a text book it will serve as an introductory text for researchers and students, and offer sufficient depth for existing researchers in AI.

(ii) Competing Titles – Please offer titles, authors, ISBNs, dates, pages, prices – publisher or Amazon URLs if possible – of competing titles, and a brief comment on how your proposed book compares.

Computational Creativity Research: Towards Creative Machines: (Editor: Tarek Besold; Publisher: Atlantis)

A recent volume (from 2015), this book is an edited volume of recent work in computational creativity. Though undoubtedly useful for researchers and students alike, this is not a volume of canonical papers and does not fill the same market gap as the proposed volume. The proposed volume will be both contemporary (insofar as it will

contain updated and revised papers) and canonical (insofar as it will collect together key papers from the field and put them in their proper perspective).

COMPUTERS AND CREATIVITY: (Editors: Jon McCormack and Mark D'Inverno; Publisher: Springer)

Another relatively recent volume (from 2012), this book is also an edited volume of recent work in computational creativity. Though undoubtedly useful for researchers and students alike, this is also not a volume of canonical papers and does not fill the same market gap as the proposed volume.

CREATIVITY AND THE AGILE MIND: A MULTI-DISCIPLINARY STUDY OF A MULTIFACETED PHENOMENON (Editors: Tony Veale, Kurt Feysaerts and Charles Forceville; Publisher: Mouton DeGruyter)

This edited volume from 2013 is a multidisciplinary collection that brings together computationalists, linguists and cognitive scientists to consider creativity from multiple perspectives simultaneously.

EXPLODING THE CREATIVITY MYTH: THE COMPUTATIONAL FOUNDATIONS OF LINGUISTIC CREATIVITY (Author: Tony Veale; Publisher: Bloomsbury/Continuum)

This monograph from 2012 explores Computational Creativity as it applies to language.

(iii) Readers – Please offer a comment on each audience group, including reader prerequisites. In doing so, please reorder the following list to match expected audience share:

scientists and researchers: This text will offer a canonical perspective on the field for researchers already working in the field but focused on one particular area to the exclusion of others (e.g. on language but not image or music). The text will offer a valuable insight into those other areas. Naturally, the text will also offer a valuable and wide-ranging perspective to scientists and researchers from fields other than CC, either other branches of AI or CS more generally.

postgraduates and undergraduates: the text will offer a compact introduction to CC for those beginning a research career in computational creativity. It will also be of some use to undergraduates doing final-year projects and theses, or to those deciding on a future research career

lecturers and tutors: the text will be of particular use to teachers offering graduate courses on Computational Creativity. Knowing the authors in the field and their areas of specialization, lecturers and tutors can also access related slides and lecturing material from public repositories such as *slideshare* (e.g. for [Tony Veale](#))

practitioners and professionals: CC is an engineering branch of AI that focuses on the development of systems that produce outputs that are novel *and* useful. As such, a significant aspect of CC research is focused on potential applications that are of particular use to professionals, and on co-creative collaborative systems that are of interest to practitioners.

academic and corporate libraries: the above uses will make this text a useful addition to academic and professional libraries.

others: the text will be a useful reference for media enquiries, for non-scientists (e.g. writers) doing lay research, etc.

(iv) Keywords (in order of preference): Computational Creativity, Creativity, Generation, Artificial Intelligence, Language, Music, Narrative

(v) ACM Classification (<http://www.acm.org/about/class/2012>) Artificial intelligence

(vi) Disciplines (prioritized): Artificial intelligence, Philosophical/theoretical foundations of artificial intelligence, Machine learning

(vii) Unique Selling Points: Computational Creativity is a relatively new discipline that draws into sharp focus those aspects of computer science that have been present, if often implicitly so, in Artificial Intelligence research

since the 1950s. The book is conceived as a CC equivalent of Marvin Minsky's *Semantic Information Processing*, an influential edited volume from the 1960s that shaped a generation of AI researchers.

(F) Special Book Requirements

By default we publish black/white books in standard layout. For special cases – where the subject/treatment demands it – we may handle special features such as color figures or text, links to online course notes or documentation, etc. Please explain any such requirements.

(G) Promotion

(i) Promoters – Individuals, organizations, newsgroups, etc. willing to help promote the book. For example, through special events (conferences, workshops, seminars, tutorials, summer/winter schools, etc.), reviews or otherwise.

The book will be promoted via Computational Creativity channels (dedicated web-sites, Twitter feed) and events (e.g. the yearly International Conference on Computational Creativity) and via the web-site of the *PROSECCO* consortium (<http://prosecco-network.eu/>) and the *Association for Computational Creativity* (<http://computationalcreativity.net/>).

(ii) Relevant Journals/Periodicals

Special issues on Computational Creativity have been (or are being) organized in the following journals, making them relevant to this proposed volume:

New Generation Computing, Minds and Machines, Journal of Knowledge-Based Systems, Cognitive Computation, Journal of Artificial General Intelligence

(iii) Conferences – For presenting the published book at a Springer book exhibit, or flyers, etc. Please offer conference acronyms, titles, locations, dates and URLs, if available.

The International Conference on Computational Creativity (ICCC)

The International Joint Conference on Artificial Intelligence (IJCAI)

(iv) Author Book Support – Notes on, for example, online downloadable software, exercises, slides, tutorials, etc.

We will provide online support for the book via web demos, downloadable software, lecture slides, etc. E.g. see <http://robotcomix.com> <http://prosecco-network.eu>

(H) Textbook

(i) Courses – If your book is a textbook – i.e., it would be adopted for an undergraduate or postgraduate course – please offer details of such courses, if possible pointing to specific examples (course names, universities, lecturers).

(ii) Textbook Features – Does your book contain features such as chapter and section summaries; detailed derivations of results; many detailed illustrations; end-of-chapter exercises/questions; outline answers or fully worked-out solutions, etc.

(I) Sample Content

Please specify the status of any sample content accompanying this proposal. Is it complete? Is it ready for external review?

This is proposed as an edited volume of revised, updated canonical papers. Sample canonical papers are available on request.

(J) Reviewers

We welcome your suggestions on reviewers. [Please note we may also call in other reviewers, usually in a single-blind process.]

Lists of potential reviewers can be provided on demand. A good candidate pool for qualified reviewers is the programme committee of the annual ICC (International Conference on Computational Creativity).

(K) Other Notes

Please offer any further comments or suggestions.

We see this volume as an important element of the promotion of CC as a discipline and an attractive field of research. We shall work to promote the book and the field hand in hand, and recommend the book to newcomers as the ideal starting point for beginning research in CC.