

CURRICULUM VITAE

Wouter J. M. Van den Broeck

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PERSONAL

surname Van den Broeck
name Wouter Joseph Marie
nationality Belgian
homepage <http://www.addith.be>

LANGUAGES

Dutch mother tongue
English fluent reading, writing and speaking
French reading and speaking

EDUCATION

2001 – 2005

Master Computer Science

Vrije Universiteit Brussel (VUB)

graduated **summa cum laude**

Extra-curriculum activities:

- 1st year: Freshman students' representative.
- 2nd year: Students' representative in the Departmental Board and the Educational Committee of Faculty of Science Council.
- 3rd year: Students' representative in the Departmental Board, the Faculty of Science Council and Educational Committee, and the University's Council of Education and Curriculum Committee.
- 4th year: Students' representative in the Departmental Board, the Faculty of Science Council, and the University Board's IT Committee.

1992 – 1994

Bachelor Fashion Design

Royal Academy of Arts, Antwerp

cum laude

1988 – 1991

Secondary education

Architectural Arts and Science

Pius X Institute, Antwerp

PROFESSIONAL

- 2012 – current** **Lecturer** and **researcher** for the new professional bachelor in multimedia and communication technology at the Design & Technology department of the **Erasmus University College Brussels** (Erasmushogeschool Brussel) in Belgium. I teach an introductory creative programming course and advanced courses on data visualisation and interactive storytelling. I also guide student projects and I do research on data visualisation for wearable devices.
- 2008 – 2013** **Researcher** at the **Institute for Scientific Interchange** (ISI Foundation) in **Torino**, Italy, working primarily on the projects SocioPatterns (<http://www.sociopatterns.org>) and GLEAMviz (<http://www.gleamviz.org>).
- The SocioPatterns project aims to investigate patterns in human interaction through the research, development and deployment of an active-RFID based sensing infrastructure, and the analysis of the collected data.
- The GLEAMviz project is concerned with the research and development of a model and simulation system for the forecasting and analysis of global epidemic spreading, using detailed real-world data on the population distribution and mobility in combination with detailed models of the infection dynamics and the effect of intervention strategies.
- In both projects my contribution is mainly situated in the research and development of methods and applications to facilitate the analysis of complex data by means of interactive visual analytics. In this multidisciplinary work I integrate my experience with informatics, science and interaction design.
- 2005 – 2008** **Assistant Researcher** at **Sony Computer Science Laboratory** in **Paris**, France, working primarily on the semantic aspects of emergent languages in the context of the EC-Agents project (<http://ecagents.istc.cnr.it/>).
- In this project I worked on the research and development of an artificial intelligence system in support of research on the self-organisation of emergent (artificial) languages. The system is responsible for the representation, interpretation and production of the meaning of (initially nominal) phrases. This meaning was represented in terms of *constraint networks*, such that the interpretation corresponded to finding solutions for the corresponding *constraint satisfaction problem*. The production of this meaning consisted of an incremental search process that identifies appropriate constraint networks, a process that corresponds to certain forms of automated constraint programming.
- To facilitate the development of this system and the analysis of its operations, I developed a complementary interactive software application that enabled an efficient visual analysis of the complex meaning structures and search processes produced by the meaning system.

- 2000 – 2002 Freelance Design and Development.**
 In this period I specialised in the development of web-based multi-player environments using the Adobe Flash platform. I worked on a number of projects for international clients:
- 3rd-Elevation/M-Player Europe, Amsterdam, Netherlands: Lead development of the client application for a new multi-player game platform.
 - Xadra LLC, USA: Development of an ActionScript library to be used by client applications that use Xadra's Fortress Multi-Player server.
 - Tagora Interactive and ING (formerly BBL), Brussels, Belgium: Lead development of the client application for Futuriland, a web-based multi-player environment for young adolescents.
- 1998 – 2000 Guest Professor 'New Media & Web Interface Design' at Karel De Grote Hogeschool,** Graphic Design department (former St.-Lucas Institute), Antwerp, Belgium.
- 1996 – 2000 Founder of, and Director of Development at Amphion Multi-Media bvba,** a new-media design, development and communication agency in Antwerp, Belgium.
 Building on my earlier freelance work, I founded a company to accommodate growth and extend the breadth of the provided services. We specialised in the development of user-interfaces for internet and intranet websites as well as CD-ROMs. In sync with the growth of the company, my role gradually shifted from active creative production to management of the creative team.
- 1994 – 1996 Freelance Interface Designer** for o.a. Digitale Metropool Antwerpen, SCA Packaging, Telepolis Antwerpen, INnet, Radio Vlaanderen Internationaal.

CULTURAL

- oct 2012 Conception, teaching and mentoring** in a five-day workshop on *the Language of Network Representations* in the *Master Atelier Pluridisciplinaire Pratiques Graphiques et Complexité Scientifique*, at the **École de Recherche Graphique** in Brussels.
- 2011-2014** Participation in **STUDIOLAB** (<http://www.studiolabproject.eu>), an international art-science collaboration project with the support of the FP7 programme of the European Commission.
- 2009-2012 Epidemic Planet**, an interactive scientific visualisation exhibit developed in the context of the GLEAMviz project, shown at:
- April-July, 2009: Infectious, exhibition, **Science Gallery**, Dublin, Ireland
 - April 2010: **International Science Festival**, Edinburgh, UK
 - April 2010: FET@EP, demonstration, **European Parliament**, Strasbourg, France
 - November 2010: **Super Computing**, conference exhibition, New Orleans, USA
 - 2010-2011: **CosmoCaixa Mòbil "Tecnorevolució"**, traveling exhibition, Spain
 - 2012-2013: **Epidèmia!** exhibition, Cosmo Caixa Science Museum, Barcelona, Spain
 - 2013-2014: **Epidèmia!** exhibition, Cosmo Caixa Science Museum, Madrid, Spain
- 2011** Art-science presentations in exhibition and seminar at the **Pixelache Festival** in Helsinki, Finland.

- 2010 Practice Mapping**, an art-science workshop project and exhibit at Interactivos? LABoral: When Process Becomes Paradigm, **LABoral**, Gijón, Spain.
- 2009 Infectious SocioPatterns**, interactive art-science exhibit at Infectious, **Science Gallery**, Dublin, Ireland.
- 2000 Kort Geknipt**, a 4-day multi-media installation/performance in collaboration with Tom “Sexion28” Tossey, for **Theater op de Markt**, an international theatre festival in Hasselt, Belgium.
- 1996 – 2000 The Museum Revisited**, a digital art project in collaboration with Boy & Erik Stappaerts, consisting of an interactive exhibit, digital prints and digital movie, shown in:
- 2000: **S.M.A.K.**, Gent (BE)
Fil Rouge, Biennale Louvain-la-Neuve (BE, Curator Filip Braem)
- 1999: *Trouble Spot Painting*, **MuHKA**, Antwerpen (BE)
 Information Days, Argos, Beursschouwburg, Brussels (BE)
- 1998: Gallery Aurel Scheibler, Köln (DE)
Ink & Töner, De Markten, Brussel (BE)
Tussenruimten, Baljuwhuis, Galmaarden (BE)
The Bold and the Beautiful, Rubenslei 17, Antwerpen (BE)
Brückengang, Bündesverband Der Deutsche Galerien, Köln (DE)
 Kunstmesse, Köln (DE)
 Art Fair, New York (USA)
 Art Fair, Bazel (DE)
- 1997: *All of a sudden II*, Galerie Aurel Scheibler, Köln (DE)
 Art Fair, Bazel (DE)
- 1996: Rijksakademie, Amsterdam (NL)
Malmö - Amsterdam, Gesellschaft für Aktuelle Kunst, Bremen (DE)
- 1996 – 1997** Member of editorial board of **Brakke Hond** (BE), a literary periodical, responsible for design and maintenance of the website.
- 1996** Conception, organisation and participation of/in “**The Playground**”, a 4-day multi-media art, music and performance event at the **Salon d’Artists** art show in Mechelen, Belgium.
- 1995 – 1999** Conception, design and editorial for **Amphion** webzine: “**Kamers Met Zicht**”, covering electronic music, digital art, DJ culture and fringe nightlife. Co-founder of Amphion v.z.w. (a non-profit).

TEACHING

- 2013 – 2014** Courses **Creative Programming I & II**, **Visual Performance & Installation Technology**, and **touch-table design & development project**, Erasmushogeschool Brussel, Belgium.
- 2012 – 2013** Courses **Creative Programming I & II**, Erasmushogeschool Brussel, Belgium.
- October 2012** **The language of data and network visualisations**, during a five-day workshop in the *Master Atelier Pluridisciplinaire Pratiques Graphiques et Complexité Scientifique*, at the École de Recherche Graphique in Brussels, Belgium.
- October 2012** Session on **visualising network data** in *Big Dive*, a four-week *big-data* training program, Torino, Italy.
- 2011** Lecture and workshop on **mapping and data visualisation** during the Pixelache Festival in Helsinki, Finland.

- 2009** Three-day workshop on **Visualising Infectious SocioPatterns**, Science Gallery, Dublin, Ireland.
- 2006** Three classes on **constraint-based artificial intelligence systems** in the course *Advanced Artificial Intelligence* for the *master in computer science* at the Vrije Universiteit Brussel, Belgium.
- 1998 – 2000** **New media & web interface design** (Flash and HTML) during one-week guest lectures at the Karel De Grote Hogeschool, Graphic Design department (former St.-Lucas Institute), Antwerp, Belgium.

ACADEMIC

- 2005-2012** Participation in research projects funded by the FP7 programme of the European Commission:
 - 2005-2008: **ECAGENTS** (<http://ecagents.istc.cnr.it>)
 - 2008-2012: **EPIWORK** (<http://www.epiwork.eu>)
 - 2011-2013: **STUDIOLAB** (<http://www.studiolabproject.eu>)
- April 2011** Participation in one-month group-residency on *Data-driven Exploration of Dynamical Networks*, at the **Institut Méditerranéen de Recherches Avancées**, Marseille, France.
- 2010** Co-organiser of the **Data Driven Dynamical Networks** workshop at **École de Physique**, Les Houches, France.
- 2009** Co-chair of **HyperText 2009** conference, Torino, Italy.

Publications 2012 – 2013 **Empirical temporal networks of face-to-face human interactions.** A. Barrat, C. Cattuto, V. Colizza, F. Gesualdo, L. Isella, E. Pandolfi, J.-F. Pinton, L. Rava, C. Rizzo, M. Romano, J. Stehlé, A.E. Tozzi, W. Van den Broeck, European Physical Journal Special Topics 222, 1295, 2013.

The making of Sixty-Nine Days Of Close Encounters At The Science Gallery. Wouter Van den Broeck, Marco Quaggiotto, Lorenzo Isella, Alain Barrat, Ciro Cattuto. Leonardo, Vol. 45, No. 3, 2012, 2012.

On the Dynamics of Human Proximity for Data Diffusion in Ad-Hoc Networks. André Panisson, Alain Barrat, Ciro Cattuto, Wouter Van den Broeck, Giancarlo Ruffo, and Rossano Schifanella. Ad Hoc Networks, doi: 10.1016/j.adhoc.2011.06.003, 11/2012.

Publications 2011 **High-Resolution Measurements of Face-to-Face Contact Patterns in a Primary School.** Juliette Stehlé, Nicolas Voirin, Alain Barrat, Ciro Cattuto, Lorenzo Isella, Jean-François Pinton, Marco Quaggiotto, Wouter Van den Broeck, Corinne Régis, Bruno Lina and Philippe Vanhems. PLoS ONE 6(8): e23176. doi:10.1371/journal.pone.0023176, 08/2011.

Simulation of an SEIR infectious disease model on the dynamic contact network of conference attendees. Juliette Stehlé, Nicolas Voirin, Alain Barrat, Ciro Cattuto, Vittoria Colizza, Lorenzo Isella, Corinne Régis, Jean-François Pinton, Naghm Khanafer, Wouter Van den Broeck, and Philippe Vanhems. BMC Medicine, 9(87), 07/2011.

Using wearable electronic sensors for assessing contacts between individuals in various environments. N. Voirin, J. Stehlé, A. Barrat, C. Cattuto, L. Isella, J.-F. Pinton, M. Quaggiotto, N. Khanafer, W. Van den Broeck, C. Régis, B. Lina en P. Vanhems. BMC proceedings; International Conference on Prevention & Infection Control (ICPIC 2011); 5:1-1. DOI: 10.1186/1753-6561-5-S6-O51, 29/06/2011.

Close Encounters in a Pediatric Ward: Measuring Face-to-Face Proximity and Mixing Patterns with Wearable Sensors. Lorenzo Isella, Mariateresa Romano, Alain Barrat, Ciro Cattuto, Vittoria Colizza, Wouter Van den Broeck, Francesco Gesualdo, Elisabetta Pandolfi, Lucilla Ravà, Caterina Rizzo, Alberto Eugenio Tozzi. PLoS ONE 6(2): e17144. doi:10.1371/journal.pone.0017144, 28/02/2011.

What's in a crowd? Analysis of face-to-face behavioral networks. Lorenzo Isella, Juliette Stehlé, Alain Barrat, Ciro Cattuto, Jean-François Pinton, and Wouter Van den Broeck. Journal of Theoretical Biology. Volume 271, Issue 1, p.166-180, 21/02/2011.

The GLEAMviz computational tool, a publicly available software to explore realistic epidemic spreading scenarios at the global scale. Wouter Van den Broeck, Corrado Gioannini, Bruno Goncalves, Marco Quaggiotto, Vittoria Colizza and Alessandro Vespignani. BMC Infectious Diseases, 11:37doi:10.1186/1471-2334-11-37, 02/02/2011.

Wearable sensor networks for measuring face-to-face contact patterns in healthcare settings. Alain Barrat, Ciro Cattuto, Vittoria Colizza, Lorenzo Isella, Caterina Rizzo, Alberto E. Tozzi and Wouter Van den Broeck. In: Proceedings of the 3rd International ICST Conference on Electronic Healthcare for the 21st century (eHealth 2010). Casablanca, Morocco, December 2010. (Won conference best paper award)

Social dynamics in conferences: Analysis of data from the Live Social Semantics application. Alain Barrat, Ciro Cattuto, Martin Szomszor, Wouter Van den Broeck, and Harith Alani. In: Proceedings of the 9th International Semantic Web Conference (ISWC 2010).

Publications 2010

Providing Enhanced Social Interaction Services for Industry Exhibitors at large Medical Conferences. Martin Szomszor, Patty Kostkova, Ciro Cattuto, Wouter Van den Broeck, Alain Barrat, and Harith Alani. In: Proceedings of the 3rd International Conference on Developments in eSystems Engineering (DeSE 2010), 6-8 September 2010, London. 09/09/2010.

Dynamics of Person-to-Person Interactions from Distributed RFID Sensor Networks. Ciro Cattuto, Wouter Van den Broeck, Alain Barrat, Vittoria Colizza, Jean-François Pinton, and Alessandro Vespignani. PLoS ONE 5(7): e11596. doi:10.1371/journal.pone.0011596, July 2010.

Semantics, sensors, and the social web: The live social semantics experiments. Martin Szomszor, Ciro Cattuto, Wouter Van den Broeck, Alain Barrat, and Harith Alani. The Semantic Web: Research and Applications, p. 196-210. Lecture Notes in Computer Science, Volume 6089/2010, 196-210, DOI: 10.1007/978-3-642-13489-0_14. Springer Berlin/Heidelberg.

The Live Social Semantics application: a platform for integrating face-to-face presence with on-line social networking. Wouter Van den Broeck, Ciro Cattuto, Alain Barrat, Martin Szomszor, Gianluca Correndo, and Harith Alani. Proceedings of the First International Workshop on Communication, Collaboration and Social Networking in Pervasive Computing Environments, PerCol 2010.

Publications 2009

Modeling the critical care demand and antibiotics resources needed during the Fall 2009 wave of influenza A(H1N1) pandemic. Duygu Balcan, Vittoria Colizza, Andrew C. Singer, Christos Chouaid, Hao Hu, Bruno Goncalves, Paolo Bajardi, Chiara Poletto, José J. Ramasco, Nicola Perra, Michele Tizzoni, Daniela Paolotti, Wouter Van den Broeck, A.-J. Valleron, and Alessandro Vespignani. PLoS Currents: Influenza. 2009 Dec 4, RRN1133.

Estimate of Novel Influenza A/H1N1 cases in Mexico at the early stage of the pandemic with a spatially structured epidemic model. Vittoria Colizza, Alessandro Vespignani, Nicola Perra, Chiara Poletto, Bruno Gonçalves, Hao Hu, Duygu Balcan, Daniela Paolotti, Wouter Van den Broeck, Michele Tizzoni, Paolo Bajardi, and José J. Ramasco. PLoS Currents: Influenza. 2009 Nov 11:RRN1129.

Modeling vaccination campaigns and the Fall/Winter 2009 activity of the new A(H1N1) influenza in the Northern Hemisphere. Paulo Bajardi, Chiara Poletto, Duygu Balcan, Hao Hu, Bruno Goncalves, José J. Ramasco, Daniela Paolotti, Nicola Perra, Michele Tizzoni, Wouter Van den Broeck, Vittoria Colizza and Alessandro Vespignani. Emerging Health Threats Journal 2009, 2:e11. doi: 10.3134/ehthj.09.011.

Seasonal transmission potential and activity peaks of the new influenza A(H1N1): a Monte Carlo likelihood analysis based on human mobility. Duygu Balcan, Hao Hu, Bruno Goncalves, Paolo Bajardi, Chiara Poletto, José J. Ramasco, Daniela Paolotti, Nicola Perra, Michele Tizzoni, Wouter Van den Broeck, Vittoria Colizza, and Alessandro Vespignani. BMC Medicine 2009, 7:45.

Live Social Semantics. Harith Alani, Martin Szomsor, Ciro Cattuto, Wouter Van den Broeck, Gianluca Correndo, Alain Barrat. 8th International Semantic Web Conference ISWC2009.

Publications 2005-2008

Constraint-based Compositional Semantics. Wouter Van den Broeck. In Andrew D. M. Smith and Kenny Smith and Ramon Ferrer i Chancho, editor, The Evolution of Language: Evolang 7, 2008. World Scientific.

A constraint-based model of grounded compositional semantics. Wouter Van den Broeck. In Luis Seabra Lopes, Tony Belpaeme, Stephen J. Cowley, editor, Language and Robots: Proceedings of the Symposium. 10-12 December 2007, Aveiro, Portugal, December 2007. Universidade de Aveiro.

Is Scale-Free a Realistic Topology for Evolving Biochemical Networks. H. Bersini, T. Lenaerts and W. Van den Broeck. In J.F.F. Mendes, S.N. Dorogovtsev, A. Povolotsky, F.V. Abreu and J.G. Oliveira, Science of Complex Networks. AIP Conference Proceedings 776:227-251, 2005.

Selected presentations

- January 27, 2012 – **The language of network representations.** [Networks and Borders workshop](#). [Institut Méditerranéen de Recherches Avancées](#), Marseille, France.
- November 17, 2011 – **Visualisation and interfaces for complex systems research.** [The International Meeting on Visualization in Complex Environments](#). Politecnico di Torino, Italy.
- June 7, 2011 – **The Making of Sixty-Nine Days Of Close Encounters At The Science Gallery.** Arts, Humanities, and Complex Networks – 2nd Leonardo satellite symposium at NetSci2011, Ludwig Museum – Museum of Contemporary Art, Budapest, Hungary.
- March 11, 2011 – **Mapping towards a data-driven society.** [Map me if you will](#) symposium, [Pixelache Festival](#), Helsinki, Finland.
- October 22, 2010 – **Visualizing SocioPatterns.** [Connecting the Dots, A Network Visualization Symposium](#), Institute for Quantitative Social Science, Harvard University, USA.
- June 3, 2010 – **Augmented Social Reality.** Invited talk at [Frontiers of Interaction '10](#), Rome, Italy.
- July 2, 2009 – **Live Social Semantics: Linking you public parts.** [Hypertext '09](#), Turin, Italy.

SOFTWARE SKILLS

Principal tools

- Java, Eclipse, Processing
- C++, Open Frameworks
- Adobe Flash Builder, Flash Pro, Flex, ActionScript, Air
- Adobe Photoshop, Dreamweaver, Illustrator
- OmniGraffle
- HTML, CSS, JavaScript, JQuery
- PHP, WordPress
- Apple OS X, Keynote, Pages, Numbers, iMovie
- Windows, Microsoft Word, Excel
- Subversion, Git

Experienced with

- Python, Django, Twisted
- Common Lisp, Emacs
- C, SmallTalk
- SQL, mySql, SQLite
- UML, Poseidon, ArgoUML
- SVG, DTD, XMLSchema, XSLT
- Microsoft Powerpoint, Access, Visio
- Premiere, Macromedia Director, Apple Final Cut
- Mathematica, Lightwave 3D (v5.5)
- Windows, Linux