

## WILLIAM GREGORY SAKAS

Department of Computer Science  
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### EDUCATION

Ph.D. (2000) City University of New York (Computer Science)  
A.B. (1982) Harvard College (Economics)

### ACADEMIC POSITIONS

2016 - Director, Computational Linguistics Masters Program and Doctoral Certificate Program, The Graduate Center.  
2013 - Chair, Department of Computer Science, Hunter College  
2009 - 2010 Acting Chair, Department of Computer Science, Hunter College (spring semesters).  
2008 - 2010 Faculty Director, Mellon Project for General Education, Hunter College.  
2007 - 2013 Co-Founding Director, Computational Linguistics Masters Program and Doctoral Certificate Program, The Graduate Center.  
2005 - Associate Professor, Department of Computer Science, Hunter College, Doctoral Faculties, Programs of Linguistics and Computer Science, The Graduate Center (tenured).  
2001 - 2005 Assistant Professor, Doctoral Faculties, Programs of Linguistics and Computer Science, The Graduate Center.  
2000 - 2005 Assistant Professor, Department of Computer Science, Hunter College, The City University of New York.  
1999 - 2000 Instructor, Department of Computer Science, Hunter College.  
1997 - 1998 Substitute Instructor, Department of Computer Science, Hunter College.  
1985 - 1989 Adjunct Lecturer, Department of Computer Science, Adelphi University.  
1985 - 1986 Instructor, Computer Science, The Yeshiva University High School.  
1982 - 1984 Instructor, Computer Science, Math and Music, The American School in Switzerland (TASIS).  
1982 Course Coordinator, Introduction to Computer Science, Harvard Summer School.  
1981 - 1982 Adjunct Lecturer, Harvard Extension College.  
1979 - 1982 Group Leader/Instructor, Core Curriculum Computing Requirement, Harvard College.

### RESEARCH FOCUS

Computational modeling of human language and human language acquisition. What are the consequential components of a computational model of human language and how can they be accurately correlated with empirical psycholinguistic data and human mental capacities? Research methods draw from psychology, computational linguistics, linguistic theory, machine learning, probabilistic modeling, corpus analysis, psycholinguistics, and computational learning theory.

**ADMINISTRATIVE  
AND  
CURRICULUM  
EXPERIENCE**

- Member, Oversight Committee of *Introduction to Computer Science* pilot course, Macaulay Honors College, CUNY (2015 - )
- Faculty Personnel and Budget Committee (makes college-wide promotion and tenure recommendations, among other charges—de facto member as department chair), Hunter College (2013 - )
- Broadening Participation Member representing Hunter College, Harvard/MIT Center for Brains, Minds and Machines (*CBMM*) (2012 - )
- Member, Computer Science Ph.D. Program Admissions Committee (2013 - )
- Acting Chair, Hunter College Senate Budget Committee (2014 - 2015)
- Member, Hunter College Senate Budget Committee (2012 - 2015)
- Member, Executive Committee of the Computer Science Ph.D. Program, The Graduate Center. (2009 - 2015)
- Co-Founding Director, Computational Linguistics Masters Program and Doctoral Certificate Program, The Graduate Center.
- Member, Doctoral Faculty Membership Committee, Linguistics Ph.D. Program, The Graduate Center (2009 - 2012)
- Member, Ruth and Harold Newman Dean of the School of Arts and Sciences Search Committee, Hunter College (2010 - 2011)
- Co-Chair, Bioinformatics Faculty Search Committee, Hunter College. This interdisciplinary committee composed of faculty members from Computer Science, Biological Sciences and Physics was charged with finding a new Hunter faculty member with expertise in high performance computing and bioinformatics who could work with colleagues across disciplines. (2009 - 2010).
- Steering Committee, Chair and Faculty Director, Mellon Project for General Education, Hunter College. Supported with funds from the Mellon Foundation this committee was engaged in: i) advancing and overseeing reform and innovation of Hunter's General Education (GER) Requirement and related graduation requirements, ii) establishing an oversight structure for general education, iii) creating new GER initiatives, iv) coordinating efforts between multiple Mellon sub-committees, Student Services and the administration, and v) overseeing a \$500,000 budget. (2008 - 2010).
- Chair, Hunter College Senate Academic Freedom Committee. (2007 - 2010).
- Member, Mellon Project Steering Committee. (2007 - 2008).
- Chair, Hunter College Arts and Sciences Curriculum Committee, Division of Math and Sciences. All new graduate and undergraduate degrees, programs, concentrations, courses and any changes in title, description, number of credits, prerequisites and hours must pass through this committee. (2005 - 2008).
- Chair, Hunter College Arts and Sciences Ad-hoc Planning Committee for establishing interdisciplinary concentrations in cognitive science. This committee was established to explore the possibility of establishing concentrations in cognitive science across and within the Anthropology, Psychology, Education, Computer Science, Geography, and Film and Media departments. (2005).
- Chair, Hunter College Department of Computer Science Curriculum Committee. (2000 - 2008).

- Notable Course Development:

*Supervised Research.* A structured means by which undergraduates can receive academic credit for working with faculty on original research projects that will lead to publication in a peer-reviewed journal or conference proceedings.

*Computational Linguistics: Methods 1 and Methods 2.* An introduction to computational methods for graduate students in linguistics - both Ph.D. and Masters students. Topics included programming in Python, corpus analysis, probability and Bayesian inference, object-oriented design, and basic topics from machine learning and information theory.

*Computational Natural Language Learning.* A novel introduction to computational linguistics targeted at linguistics graduate students with little computational skills. The course introduces computational topics through the umbrella of psycholinguistics. The course was the topic of a paper presented at an international workshop on teaching computational linguistics - *Psychocomputational Linguistics: A Gateway to the Computational Linguistics Curriculum* (Sakas, 2008).

*Introduction to Computer Science.* An unusual introductory survey which merges both technical and programming components of computer science for students considering, but not committed to a computer science major. Hunter College (with Eric Schweitzer).

*Pair Programming Lab.* An introductory “power programming” lab course for students enrolled in an introductory programming course. Hunter College.

## PUBLICATIONS

- Sakas, W.G., Berwick, R.C and Yang, C.D. (to appear) Parameter setting is feasible, *Linguistic Analysis*.
- Fodor, J.D. and Sakas, W.G. (to appear). Learnability Theory, in I. Roberts (ed.) *Oxford Handbook of Universal Grammar*, Oxford: Oxford University Press.
- Sakas, W.G. (to appear). Computational Approaches to Parameter Setting in Generative Syntax, in J. Lidz, J. Pater and W. Snyder (eds.) *Oxford Handbook of Developmental Linguistics*. Oxford: Oxford University Press.
- Sakas, W.G., Berwick, R.C., Corver, A., Wilkens, R., Yang, C.D. (2015) Parameter Setting is Feasible. Presentation at the 6<sup>th</sup> annual meeting of Generative Approaches to Language Acquisition North America (GALANA 6), College Park, Maryland.
- Sakas, W.G. and Fodor, J.D. (2012). Disambiguating syntactic triggers, *Language Acquisition*, pp. 83-143.
- Clark, A. and Sakas, W.G. (2011). Computational Models of Human Language Acquisition, *Special Issue of Research on Language and Computation*, 8(2-3), pp.101-106.
- Kam, X.N., Stoynezhka, I. Tornyova, L. Sakas, W.G., and Fodor, J.D. (2008). Bigrams and the Richness of the Stimulus *Cognitive Science*, 32, pp. 771-787.
- Sakas, W.G. (2008). Psychocomputational Linguistics: A Gateway to the Computational Linguistics Curriculum, *Proceedings of the 3<sup>rd</sup> Workshop on Issues in Teaching Computational Linguistics*, pp. 120-128.

- Fodor, J.D., Sakas, W.G. and Hoskey, A. (2007). Implementing the Subset Principle in Syntax Acquisition: Lattice-Based Models, *Proceedings of the Second European Cognitive Science Society Conference*, pp. 161-167.
- Fodor, J.D. and Sakas, W.G. (2005). The Subset Principle in Syntax: Costs of Compliance, *Journal of Linguistics*. 41(3), pp. 513-569.
- Kam, X.N., Stoyneshka, I. Tornyova, L. Sakas, W.G., and Fodor, J.D. (2005). Statistics vs. UG in language acquisition: Does a bigram analysis predict auxiliary inversion? *Proceedings of the Workshop on Computational Models of Human Language Acquisition*, 43rd Meeting of the Association of Computational Linguistics. (ACL-2005), pp. 69-72.
- Sakas, W.G. (2004). Introduction, *Proceedings of the Computational Models of Human Language Acquisition Workshop*, 20th International Conference on Computational Linguistics (COLING-2004), pp. iv-v.
- Fodor, J.D. and Sakas, W.G. (2004). Evaluating Models of Parameter Setting, in A. Brugos, L. Micciulla, & C.E. Smith (eds) *Proceedings of the 28th Annual Boston University Conference on Language Development*. Cascadilla Press, Boston, pp. 1-27 (keynote paper).
- Sakas, W.G. (2003). A word-order database for testing computational models of language acquisition. *Proceedings of the 41<sup>st</sup> Annual Meeting of The Association of Computational Linguistics*, pp. 415-422.
- Sakas, W.G. and Nishimoto, E. (2002). Search, structure or statistics? A comparative study of memoryless heuristics for syntax acquisition. *Proceedings of the 24<sup>th</sup> Annual Meeting of the Cognitive Science Society*, pp. 786-791.
- Sakas, W.G. and Fodor, J.D. (2001). The Structural Trigger Learner. In S. Bertolo (ed.) *Language Acquisition and Learnability*. Cambridge University Press, Cambridge, UK, pp. 172-233.
- Sakas, W.G. (2000). Modeling the effect of cross-language ambiguity on human syntax acquisition. *Proceedings of the 4<sup>th</sup> Computational Natural Language Learning Workshop and 2<sup>nd</sup> Learning Language in Logic Workshop, jointly with the 5<sup>th</sup> International Conference on Grammatical Inference*, pp. 61-66 (plenary speaker).
- Sakas, W.G. and Fodor, J.D. (1998). Setting the first few syntactic parameters – a computational analysis. *Proceedings of the Twentieth Annual Meeting of the Cognitive Science Society*, pp. 917-922.
- Sakas, W.G. and Sylla, J. (1981) *The Core Guide to PPL Programming*. Cambridge, Mass: Harvard University Science Center Press (textbook).

**REFEREED  
PRESENTATIONS**

- Kam, X.N., Stoyneshka, I. Tornyova, L. Sakas, W.G., Fodor, J.D. (2005), Non-robustness of syntax acquisition from n-grams: A cross-linguistic perspective. 18<sup>th</sup> Annual CUNY conference on Human Sentence Processing (CUNY-2005).<sup>1</sup>
- Crowther, C., Fodor, J.D. and Sakas, W.G. (2004) Noise, Efficiency, and Stability in Modeling Language Acquisition, 10th Annual Conference on Architecture and Mechanisms for Language Processing (AMLAP-2004).

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<sup>1</sup> The CUNY Conference on Human Sentence Processing, started at CUNY but has grown to become the premiere international conference on how humans process language.

- Sakas, W.G. and Fodor, J.D. (2001) Learning-relevant Properties of Natural Language. 7<sup>th</sup> Annual Conference on Architectures and Mechanisms for Language Processing (AMLAP-2001).
- Sakas, W.G. and Fodor, J.D. (1997) Triggering, Hill-climbing and the Conservative Learner: Can a Stochastic Trigger-based Learner Afford Greediness as a Constraint? Conference on Computational Psycholinguistics (CPL 97).
- Sakas, W.G. and Schmeidler, S. (1997) Parsing Triggers: A Parameter-based Algorithm. Tenth Annual CUNY Conference on Human Sentence Processing (CUNY-1997).

**TECHNICAL  
REPORTS**

- Sakas, W.G. and Fodor, J.D. (2012) Generating CoLAG Languages Using the ‘Supergrammar’. Online at:  
[http://www.colag.cs.hunter.cuny.edu/pub/COLAG\\_2011\\_supergrammar.pdf](http://www.colag.cs.hunter.cuny.edu/pub/COLAG_2011_supergrammar.pdf)
- Kam, X.N., Stoynechka, I. Tornyova, L. Sakas, W.G., Fodor, J.D. (2007), Bigram-based learning and the richness of the stimulus for language acquisition, *LIBA Linguistics in the Big Apple: CUNY/SUNY/NYU Working Papers in Linguistics*. Online at: <http://web.gc.cuny.edu/dept/lingu/liba/papers/Kam2007.pdf>
- Fodor, J.D., Sakas, W.G., Melnikova, Y., Troseth, E. & Nishimoto, E. A (2003) Structurally Defined Language Domain for Testing Syntax Acquisition Models. Online at: <http://colag.cs.hunter.cuny.edu/pub/Supergrammar.pdf>
- Sakas, W.G. and Schmeidler, S. (2000) Parsing triggers: a multilingual mechanism for determining parameter, *CUNY Forum 20*.

**SELECTED  
INVITED TALKS  
AND  
LECTURES**

- 2012, Hofstra University Computer Science Colloquium Series, *Computational Psycholinguistics: A brief history and a ‘triggering’ case study*.
- 2010, University of Pennsylvania Linguistics Colloquium Series, *Statistics, Robustness and Computational Workload: Why we need a theory of triggers*.
- 2010, University of Maryland Annual Mayfest Linguistics Series, *Disambiguating Syntactic Triggers* (with Janet Fodor).
- 2009, Input and Syntactic Acquisition Workshop, University of California, Irvine, *Disambiguating Syntactic Triggers: Why we shouldn't throw away ‘triggering’*.
- 2009, University of Connecticut Linguistics Colloquia Series, *Disambiguating Syntactic Triggers: A triggering alternative to statistical models*.
- 2009, Rules and Exemplars in Language Acquisition Symposium, 30<sup>th</sup> Annual Meeting of the Cognitive Science Society (invited commentator).
- 2007, MIT workshop: Where does Syntax from? Have we all been Wrong? *‘Ideal’ Language Learning and the Psychological Resource Problem*.
- 2006, Invited Lecturer, Summer School in Empirical and Computational Linguistics, University of Zadar, Croatia.
- 2005, Yale University Learnability Seminar, *The Subset Principle: Costs of Compliance*.
- 2004, Midwest Computational Linguistics Colloquium, Indiana University, Bloomington, *The Subset Principle: Conspiracies and Incremental Learning*.
- 2003, University of Cambridge Michaelmas Computer Laboratory Seminar Series, *Evaluating Computational Models of Syntax Acquisition*.
- 2003, University of York Computer Science Colloquium Series, *The Need (or not) of Guessing a Grammar: Evaluating Nondeterminism within Computational Models of Human Syntax Acquisition*.

## GRANTS

- Peer-Tutoring for Programming Courses, CUNY Coordinated Undergraduate Education (CUE) Supplemental Award Program (\$10,320), 2013-2014.
- The Hunter Horizons Program: Where First-Year Orientation, Engagement and Rich Academic Content Meet, CUNY Coordinated Undergraduate Education (CUE) Supplemental Award Program (\$75,000), 2009-2010 (with Rebecca Connor, Hunter College, Co-Investigator).
- A Multilingual Dataset for Testing Computational Models of Language Acquisition, PSC-CUNY Research Award Program (\$7,878), 2004 - 2006.
- Setting Syntactic Parameters: A Computational Analysis of Child-directed Speech, CUNY Collaborative Incentive Research Program (\$30,000), 2000 - 2003 (with Janet Dean Fodor, Graduate Center, Co-Investigator).
- Supersparsing Natural Language Input, PSC-CUNY Research Award Program (\$9,255), 2000 - 2002.
- An Intelligent Name and Address Parser, CUNY Institute of Software Design and Development (\$7,900), 2000 - 2001.

## PROFESSIONAL ACTIVITIES

- Editorial board, *Language Acquisition* (2011 - ).
- Guest Editor, *Research on Language and Computation, Special Issue on Computational Models of First Language Acquisition* (2012).
- Program Chair, Founder and Organizer, Psychocomputational Models of Human Language Acquisition Workshop (PsychCompLA-2004,-2005,-2007,-2008,-2009, -2011, -2012)
- Reviewer, GALANA (2015 - present)
- Reviewer, *Research on Language and Computation* (2008 - present).
- Reviewer, Linguistics Program, NSF (2007 - 2011).
- Reviewer, Annual Meeting of the Computational Natural Language Learning Special Interest Group (SIG) of the Association for Computational Linguistics (ACL) (2005 - present).
- Reviewer, Annual Meetings of the Cognitive Science Society (CogSci-2002 - present).
- Reviewer, 6th International Conference on Cognitive Modeling, Carnegie Mellon University (2004).
- Co-Director, City University of New York - Computational Language Acquisition Group (CUNY-CoLAG), with Janet Fodor.
- Principal architect and maintainer, CUNY-CoLAG Language Domain Database, a publicly available, multi-language domain of sentence patterns and fully specified sentence structures from 3,072 abstract, linguistically-motivated grammars designed as a testbed for psychocomputational models of human syntax acquisition. <http://www.colag.cs.hunter.cuny.edu/projects.html>

**INDUSTRY  
EXPERIENCE**

- Independent Computer Consultant, 1985 – 1992

Designed and engineered software to perform a wide variety of tasks including:

- a distributed human resources administration database system
- a payroll and budget forecasting application
- a front-end database query parser
- an intelligent marketing summary report generator
- a geo-based marketing analysis application
- a bank loan application approval system

Clients included Citibank, Warner Publisher Services, Warner Books, Stanwich Partners' Investing Services, The International Congress of Oral Implantologists, PnT Marketing Services and the New York Center for Communications.

**OTHER  
EXPERIENCE**

Resident composer/lyricist, Don Quixote Experimental Children's Theater, September 1987 - June 1988, Wrote the musical score for several shows performed by professional adult actors that were presented to children from schools in the New York City area.

**REFERENCES**

Dr. Vita Rabinowitz, Executive Vice Chancellor and University Provost at the City University of New York. (Former Provost, Hunter College.)

Dr. Robert Greenberg, Dean of Arts, The University of Auckland. (Former Interim Dean of Arts and Sciences, Hunter College.)

Dr. Virginia Teller, Professor Emeritus, Hunter College (Former Chair of Computer Science, Hunter College.)

President Jennifer Raab, President, Hunter College.

Provost Lon Kaufman, Acting Provost, Hunter College.

Dean Andrew Polskey, Harold and Ruth Newman Dean of Arts and Sciences, Hunter College.