

NAME	ISO	WALS	ADJ	ADP	DEM	GEN	NUM	OBV	REL	SBV	SOURCE
Ossetic	oss	oss	0	0	0	0	0	0	-	0	
Panjabi ST	pan	pan	0	0	0	0	0	0	01	0	
Pennsylvania Dutch	pde		0	1	0	1	0	01	0	0	Van Ness, Silke. 1994. Pennsylvania German. In: König, Ekkehard and Johan van der Auwera. The Germanic Languages. London/New York: Routledge. 420-438.
Persian List	pes	prs	1	1	0	1	0	0	0	0	
Polish	pol	pol	0	1	0	1	0	1	0	01	
Portuguese ST	por	por	1	1	0	1	0	1	0	0	Parkinson, Stephen. Portuguese. In: Harris, Martin and Nigel Vincent. The Romance Languages. London/Sydney: Coom Helm. 131-169.
Provençal	prv		1	1	0	1	0	1	0	0	Wheeler, Max W. 1988. Occitan. In: Harris, Martin and Nigel Vincent. The Romance Languages. London/Sydney: Coom Helm. 246-278.
Riksmal	nor	nor	0	1	0	01	0	1	0	0	
Rumanian List	ron	rom	1	1	-	1	0	1	0	0	
Russian	rus	rus	0	1	0	1	0	1	0	0	
Sanskrit	san		0	01	0	0	0	0	01	0	Ramat, Paolo and Anna Ramat. 1998. The Indo-European Languages. London/New York: Routledge; Bucknell, Roderick. 1996. Sanskrit Manual. A Quick-Reference Guide to the Phonology and Grammar of Classical Sanskrit. Delhi: Motilal Banarsidass; Whitney, William D. 1924. A Sanskrit Grammar. Including Both the Classical Language and the Older Dialects of Veda and Brahmana. Leipzig: Breitkopf & Haertel; Cardona, George. 2003. Sanskrit In: Cardona, George and Dhanesh Jain. The Indo-Aryan Languages. London/New York: Routledge. 115-178.
Sardinian C	sro	srd	1	1	0	1	0	1	0	0	Jones, Michael Allan. 1988. Sardinian. In: Harris, Martin and Nigel Vincent. The Romance Languages. London/Sydney: Coom Helm. 314-350.
Scots Gaelic	gla	gae	1	1	1	1	0	1	0	1	
Serbocroatian	bos	scr	0	1	0	01	0	1	0	0	Browne, Wayles. Serbo-Croat. In: Comrie, Bernard and Greville G. Corbett. The Slavonic Languages. London/New York: Routledge. 306-387.
Sindhi	snd		0	0	0	0	0	0	-	0	Kubchandani, Lachman M. 2003. Sindhi. In: Cardona, George and Dhanesh Jain. The Indo-Aryan Languages. London/New York: Routledge. 622-658; Yegorova, R.P. 1971. The Sindhi Language. Moscow: Nauka Gidwani; http://www.lmp.ucla.edu/Profile.aspx?LangID=201&menu=004
Singhalese	sin	snh	0	0	0	0	01	0	0	0	Gair, James W. 2003. Sinhala. In: Cardona, George and Dhanesh Jain. The Indo-Aryan Languages. London/New York: Routledge. 766-817.
Slovak	slk		0	1	0	0	0	1	0	0	Short, David. 1993. Slovak. In: Comrie, Bernard and Greville G. Corbett. The Slavonic Languages. London/New York: Routledge. 533-592.
Slovenian	slv	slo	0	1	0	01	0	1	-	0	Priestly, T.M.S. 1993. Slovene. In: Comrie, Bernard and Greville G. Corbett. The Slavonic Languages. London/New York: Routledge. 388-454.
Spanish	spa	spa	1	1	0	1	0	1	0	01	
Swedish List	swe	swe	0	1	0	0	0	1	0	0	
Tadzik	tgk	taj	1	1	0	1	0	0	0	0	
Tocharian A	xto		0	0	0	0	0	0	-	0	Winter, Werner. 1998. Tocharian. In: Ramat, Anna and Paolo Ramat. The Indo-European Languages. London/New York: Routledge. 154-168; Xianlin, J., W. Winter and Pinault G-J. 1998. Fragments of the Tocharian A Maitreyasamiti-Nāṭaka of the Xinjiang Museum, China. Berlin/New York: Mouton de Gruyter.
Tocharian B	txb		0	0	0	0	0	0	-	0	Gvozdanovic, Jadranka. 1992. Indo-European Numerals. Berlin/New York: Mouton de Gruyter; www.utexas.edu/cola/centers/lrc/eieol/tokol-0-X.html
Ukrainian	ukr	ukr	0	1	0	1	0	1	0	0	Pugh, Stefan and Ian Press. 1999. Ukrainian: A Comprehensive Grammar. London/New York: Routledge.

NAME	ISO	WALS	ADJ	ADP	DEM	GEN	NUM	OBV	REL	SBV	SOURCE
Urdu	urd	urd	0	0	0	0	0	0	-	0	
Wakhi	wbl	wak	0	01	0	0	0	0	0	0	Gruenberg, Alexander L. 1988. La langue Wakhi. Paris. Maison des sciences de l'homme; Bashir, Elena. 2009. In: Windfuhr, Gernot. The Iranian Languages. London/New York: Routledge. 825-858.
Walloon	wln		01	1	0	1	0	1	0	0	Beardsmore, Hugo Baetens. 1971. Le Français Regional de Bruxelles. Presses Universitaires de Bruxelles; Valkhoff, Marius. 1938. Philologie et Littérature Wallonnes. Groningen: Wolters; Gaziaux, Jean-Jacques. 1987. Parler Wallon et Vie Rurale au Pays de Jodoigne. Publications Linguistiques de Louvain: Louvain-la-Neuve.
Waziri	pst	psh	0	01	0	0	0	0	0	0	
Welsh N	cym	wel	1	1	1	1	0	1	0	1	

S2.4 Uto-Aztecan data

NAME	ISO	WALS	ADJ	ADP	DEM	GEN	NUM	OBV	REL	SBV
Aztec (Tetelcingo)	nhg	nht	1	1	0	1	0	1	0	01
Aztec (Zacapoxtla)	ncj	nhn	01	-	0	-	0	1	01	0
Cahuilla	chl	cah	0	0	0	0	0	0	0	0
Chemehuevi	ute	cmh	01	0	-	0	0	01	0	0
Comanche	com	cmn	0	0	0	0	0	0	0	0
Cora	crn	cor	1	0	0	01	0	1	0	1
Eudeve	opt	eud	-	0	0	0	-	0	0	0
Guarijío	var	grj	01	0	0	0	1	01	-	01
Hopi	hop	hop	0	0	0	0	0	0	-	0
Huichol	hch	hui	-	-	-	0	-	0	0	0
Kawaiisu	xaw	kws	-	-	-	-	-	01	-	01
Lui-seño	lui	lui	1	0	0	0	0	01	0	0
Mono	mnr	mno	-	0	1	0	-	0	0	0
Northern Paiute	pao	pno	0	0	0	0	0	0	0	0
Northern Tepehuan	ntp	tpn	01	0	0	0	0	1	0	1
Opata	opt	eud	-	0	0	0	-	0	0	0
Pannamint	par	tsh	0	-	01	0	0	0	01	0
Papago-Pima	ood	ood	0	01	0	01	0	1	0	1
Pima de Onavas	pia	pba	0	-	0	0	0	0	0	0
Pipil	ppl	pip	0	1	-	1	0	1	0	1
Shoshoni (Gosiute Dialect)	shh	sho	0	-	0	-	-	0	-	0
Southeastern Tepehuan	stp	tps	1	0	0	-	-	1	-	1
Southern Paiute	ute	cmh	01	0	-	0	0	01	0	0
Southern Ute	ute	ute	1	0	0	0	0	0	0	01
Tarahumara	tar	tce	0	0	0	-	-	0	0	0
Yaqui	yaq	yaq	0	0	0	0	0	0	0	0

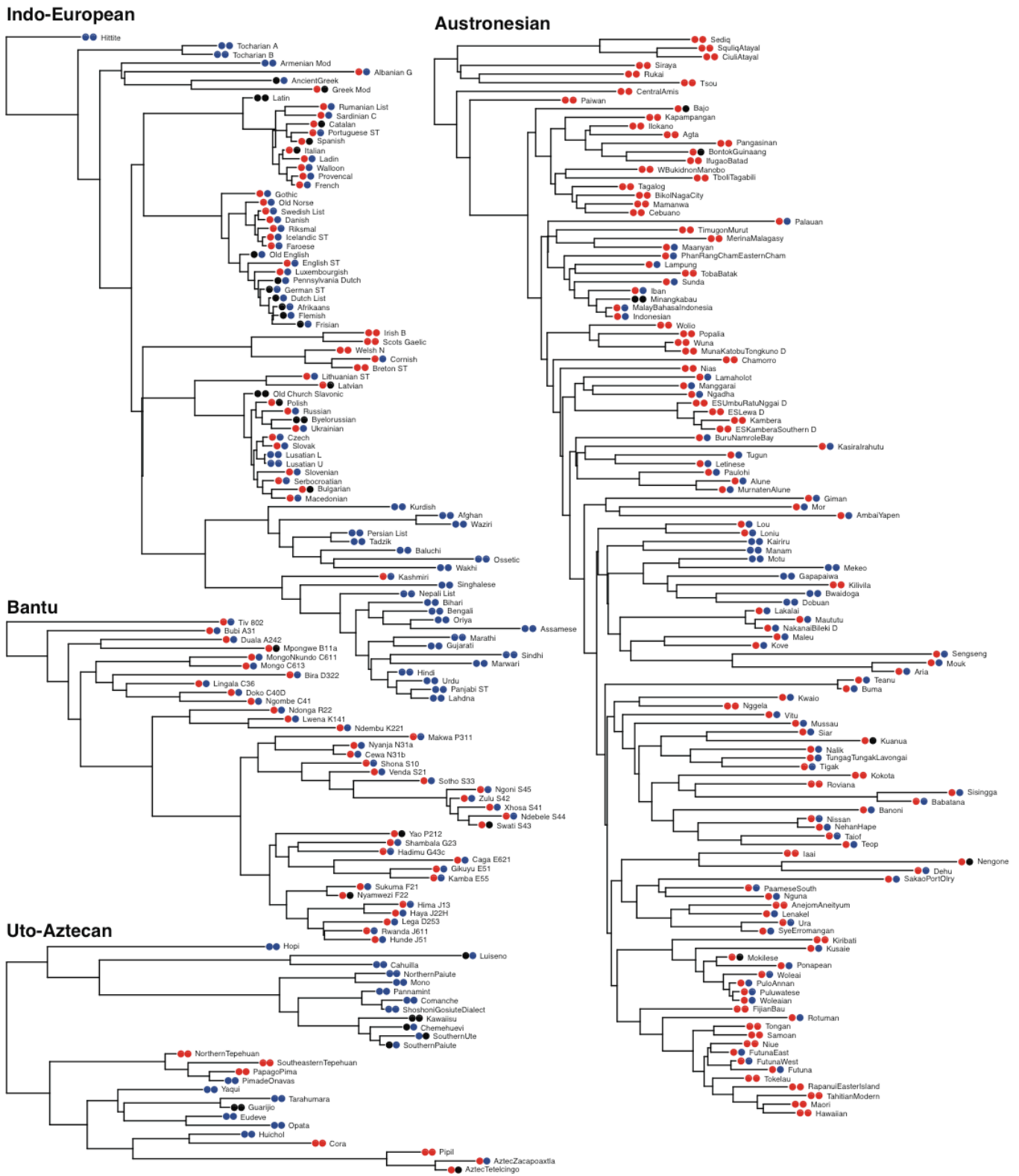


Figure S3: Character states for Subject~Verb order and Object~Verb order. Blue-blue indicates SV/OV; red-red indicates VS/VO; blue-red indicates SV/VO; red-blue indicates VS/OV. Polymorphic characters are in black. There is strong evidence for dependency ($BF=13.7$) in the Uto-Aztecan lineage only.

S3 Numerical results

This table shows the median Bayes Factors for each of the possible dependencies. Positive values from 2-5 indicate weak support for the ‘dependent’ hypothesis over the independent hypothesis. Values from 5 are conventionally considered ‘strong’ evidence (marked boldface in the results for each language family). Predicted dependencies according to Dryer are indicated by boldface labels of the feature pair; Greenbergian universals pertaining to particular feature pairs are indicated by their number after the label. Correlations involving invariant states (in Bantu) were not tested. The Dryer and Greenberg predictions are compared in Figure S4. AN=Austronesian, BA=Bantu, IE=Indo-European, UA=Uto-Aztecan. ADJ=Order of Adjective and Noun; ADP=Adposition Order; DEM=Demonstrative and Noun; GEN=Genitive and Noun; NUM=Numeral and Noun; OBV=Order of Object and Verb; REL=Relative clause and Noun; SBV=Subject and Verb.

	AN	BA	IE	UA
ADJ-ADP	0.99	-	3.95	2.78
ADJ-DEM (18)	5.53	2.9	7.64	2.51
ADJ-GEN (5)	2.83	-	21.23	3.04
ADJ-NUM (18)	15.64	3.99	0.56	1.49
ADJ-OBV (5,17)	1.21	-	1.43	2.31
ADJ-REL (24)	5.33	-0.58	-0.25	5.02
ADJ-SBV	-1.09	-0.64	6.88	1.97
ADP-DEM	-1.81	4.11	3.16	-1.13
ADP-GEN (2)	3.74	-	13.65	3.21
ADP-NUM	7.26	-	-0.6	-1.41
ADP-OBV (3,4)	15.34	-	13.34	3.82
ADP-REL (24)	-1.79	-	2.51	-0.45
ADP-SBV	2.87	-	3.39	2.56
DEM-GEN	-2.26	-	7.03	-0.54
DEM-NUM	-2.77	5.01	0.79	0.09
DEM-OBV	-2.53	-	7.55	-0.08
DEM-REL	3.28	-	-3.86	1.76
DEM-SBV	-3.69	-0.12	3	2.26
GEN-NUM	18.26	0.33	1.66	-2.68
GEN-OBV	-0.88	-	5.27	5.22
GEN-REL	3.04	-	1.05	0.09
GEN-SBV	1.15	-	5.14	3.22
NUM-OBV	1.68	-	-1.36	0.52
NUM-REL	1.09	-0.89	1.24	-1.05
NUM-SBV	-0.92	-0.72	0.42	1.1
OBV-REL (13)	-1.01	-	1.56	-1.52
OBV-SBV (1)	3.93	-	4.93	13.57
REL-SBV	3.23	-	-4.7	0.34

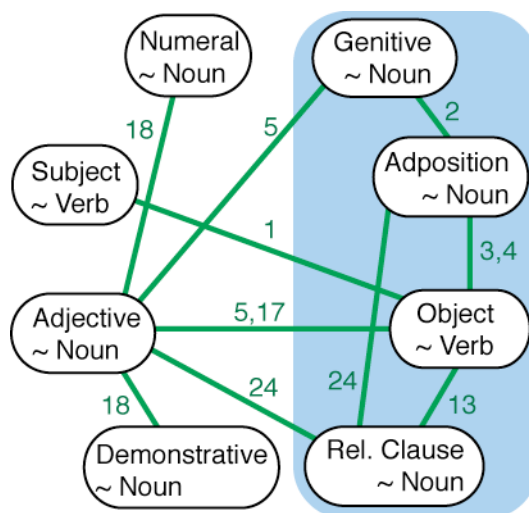


Figure S4: This figure compares Dryer's claims about word order dependencies (features in the blue area) to dependencies predicted from Greenberg's universals (green; the number of the universal according to Greenberg's classification is marked on the line).

S4 References

- Bastin, Y., Coupez, A. & Mann, M. (1999) Continuity and divergence in the Bantu languages: perspectives from a lexicostatistic study. *Annales, Sciences Humaines*, 162.
- Davis, G. (2002) *Syntax of West Germanic: The syntax of Old English and Old High German*. Kummerle.
- Dryer, M.S. (2005a) Determining the Order of Subject, Object, and Verb. In: Haspelmath, M., Dryer, M.S., Gil, D. & Comrie, B. (eds.) *The World Atlas of Language Structures*. Oxford: Oxford University Press.
- Dryer, M.S. (2005b) Order of Object and Verb. In: Haspelmath, M., Dryer, M.S., Gil, D. & Comrie, B. (eds.) *The World Atlas of Language Structures*. Oxford: Oxford University Press.
- Dryer, M.S. (2005c) Determining Dominant Word Order. In: Haspelmath, M., Dryer, M.S., Gil, D. & Comrie, B. (eds.) *The World Atlas of Language Structures*. Oxford: Oxford University Press.
- Dryer, M.S. (2008a) Order of Subject and Verb. In: Haspelmath, M., Dryer, M.S., Gil, D. & Comrie, B. (eds.) *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, chapter 82. Available online at <http://wals.info/feature/82>. Accessed on 2009-03-29.
- Dryer, M.S. (2008b) Order of Object and Verb. In: Haspelmath, M., Dryer, M.S., Gil, D. & Comrie, B. (eds.) *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, chapter 83. Available online at <http://wals.info/feature/83>. Accessed on 2009-03-29.
- Dryer, M.S. (2008c) Order of Adposition and Noun Phrase. In: Haspelmath, M., Dryer, M.S., Gil, D., & Comrie, B. (eds.) *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, chapter 85. Available online at <http://wals.info/feature/85>. Accessed on 2009-03-29.
- Dryer, M.S. (2008d) Order of Genitive and Noun. In: Haspelmath, M., Dryer, M.S., Gil, D. & Comrie, B. (eds.) *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, chapter 86. Available online at <http://wals.info/feature/86>. Accessed on 2009-03-29.
- Dryer, M.S. (2008e) Order of Adjective and Noun. In: Haspelmath, M., Dryer, M.S., Gil, D. & Comrie, B. (eds.) *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, chapter 87. Available online at <http://wals.info/feature/87>. Accessed on 2009-03-29.
- Dryer, M.S. (2008f) Order of Demonstrative and Noun. In: Haspelmath, M., Dryer, M.S., Gil, D. &

- Comrie, B. (eds.) *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, chapter 88. Available online at <http://wals.info/feature/88>. Accessed on 2009-03-29.
- Dryer, M.S. (2008g) Order of Numeral and Noun. In: Haspelmath, M., Dryer, M.S., Gil, D. & Comrie, B. (eds.) *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, chapter 89. Available online at <http://wals.info/feature/89>. Accessed on 2009-03-29.
- Dryer, M.S. (2008h) Order of Relative Clause and Noun. In: Haspelmath, M., Dryer, M.S., Gil, D. & Comrie, B. (eds.) *The World Atlas of Language Structures Online*. Munich: Max Planck Digital Library, chapter 90. Available online at <http://wals.info/feature/90>. Accessed on 2009-03-29.
- Durie, M. & Ross, M. (1996) *The Comparative Method Reviewed: Regularity and irregularity in language change*. Oxford: Oxford University Press.
- Dyen, I., Kruskal, J.B. & Black, P. (1992) An Indo-European classification: A lexicostatistical experiment. *Transactions of the American Philosophical Society*, 82:iii-132.
- Edwards, A.W.E. (1972) *Likelihood*. Cambridge: Cambridge University Press.
- Embleton, S.M. (1986) *Statistics in Historical Linguistics*. Bochum: Studienverlag Brockmeyer.
- Gray, R.D. & Atkinson, Q.D. (2003) Language-tree divergence times support the Anatolian theory of Indo-European origin. *Nature*, 426:435-439.
- Gray, R.D., Drummond, A.J., & Greenhill, S.J. (2009) Language phylogenies reveal expansion pulses and pauses in Pacific settlement. *Science*, 323:479-483.
- Greenhill, S.J., Blust, R. & Gray, R.D. (2008) The Austronesian Basic Vocabulary Database: From Bioinformatics to Lexomics. *Evolutionary Bioinformatics*, 4:271-283.
- Greenhill, S.J., Currie, T.E., & Gray, R.D. (2009) Does horizontal transmission invalidate cultural phylogenies? *Proceedings of the Royal Society B*, 276, 2299-2306.
- Haspelmath, M., Dryer, M., Gil, D. & Comrie, B. (2005) *The World Atlas of Language Structures*. Oxford: Oxford University Press.
- Hunley, K., Dunn, M., Lindström, E., Reesink, G., Terrill, A., Healy, M.E., Koki, G., Friedlaender, F.R., Friedlaender, J.S. (2008) Genetic and Linguistic coevolution in Northern Island Melanesia. *PLoS Genet*, 4: e1000239.
- Kayne, R.S. (1994) *The Antisymmetry of Syntax*. Linguistic Inquiry Monograph 25. MIT Press.
- Lansing, S.J., Cox, M.P., Downey, S.S., Gabler, B.M., Hallmark, B., Karafet, T.M., Norquest, P., Schoenfelder, J.W., Sudoyo, H., Watkins, J.C., Hammer, M.F. (2007) Coevolution of languages and genes on the island of Sumba, eastern Indonesia. *Proceedings of the National Academy of Sciences*, 104:16022-16026.
- Mace, R. & Pagel, M. (1994) The comparative method in anthropology. *Current Anthropology*, 35:549-564.
- Mayo, P. (1993) Belorussian. In: Comrie, B. & Corbett, G.G. (eds.) *The Slavonic Languages*.
- Pagel, M. (1994) Detecting correlated evolution on phylogenies: a general method for the comparative analysis of discrete characters. *Proceedings of the Royal Society B*, 255:37-45.
- Pagel, M. & Meade, A. (2004) A phylogenetic mixture model for detecting pattern-heterogeneity in gene sequence or character-state data. *Systematic Biology*, 53:571-81.
- Pagel, M. & Meade, A. (2005) Mixture models in phylogenetic inference. In O. Gascuel (Ed.), *Mathematics of Evolution and Phylogeny* (pp. 121-142). Oxford: Oxford University Press.
- Pagel, M. & Meade, A. (2006) Bayesian analysis of correlated evolution of discrete characters by reversible-jump Markov chain Monte Carlo. *American Naturalist*, 167: 808-825.
- Penny, D., McComish, B.J., Charleston, M.A. & Hendy, M.D. (2001) Mathematical elegance with biochemical realism: The covarion model of molecular evolution. *Journal of Molecular Evolution*, 53:711-723.