

Nakh-Daghestanian:

Essential background, what's distinctive, and why it's of interest to all of science

Johanna Nichols

UC Berkeley, Higher School of Economics Moscow
johanna@berkeley.edu

Please do not cite without permission.

Linguistic Convergence Lab, HSE

Online school, fall 2020: *East Caucasian languages*



Nakh-Daghestanian (East Caucasian):

An **indigenous** language family of the Caucasus

along with West Caucasian, Kartvelian, and representatives of other families: Karachay-Balkar [Turkic], Ossetic [Indo-European: Iranian], Tat (IE: Iranian); and maybe (depending on the meaning of *Caucasus*) Kumyk (Turkic), Armenian (IE), Azeri (Turkic)

An **endemic** language family of the Caucasus

along with West Caucasian and Kartvelian

Nakh-Daghestanian or East Caucasian?

Both are used.

Nakh-Daghestanian captures the initial binary split in the family tree.

East Caucasian captures the geography, but is sometimes taken to suggest that East Caucasian and West Caucasian are two branches of a larger family – which they are not; neither has any demonstrable relatives.

Daghestan or Dagestan?

Dagestan transliterates the Russian word.

Daghestan captures the indigenous pronunciation. The word nicely reflects the Turco-Persian intellectual heritage of the eastern Transcaucasus: Turkic (presumably Ottoman Turkish) *dağ* 'mountain' and Persian suffix *-stan* for names of countries and ethnic territories.

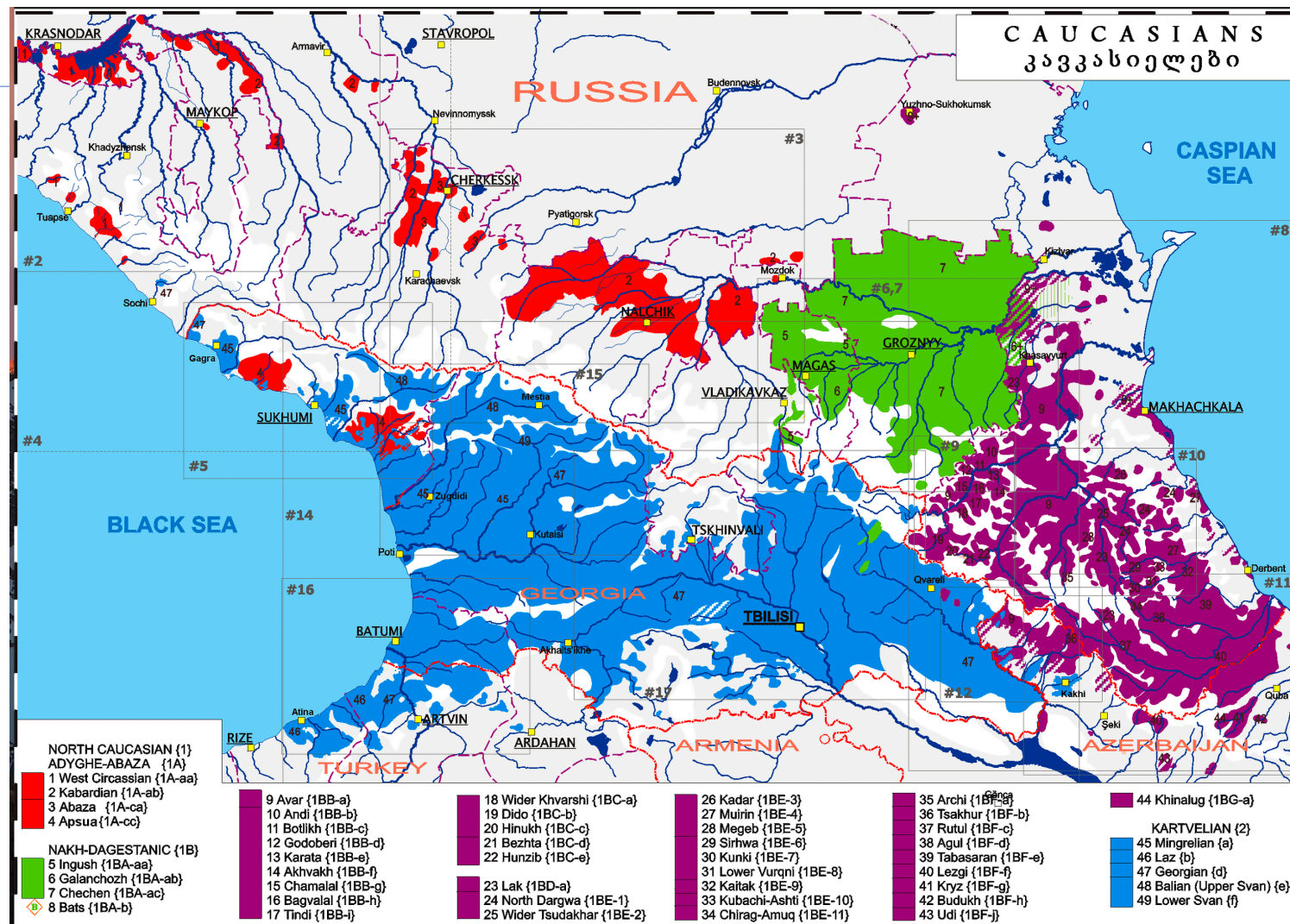
The Great
Caucasus
range



The Great Caucasus range



Modern
ranges of
endemic
language
families



https://commons.wikimedia.org/wiki/File:Caucasian_Peoples_and_Languages_as_of_1990-2010.gif

Modern
ranges of
endemic
languages

(Yuri Koryakov)

<http://lingvarium.org/maps/caucas/1-all.gif>

Part of:

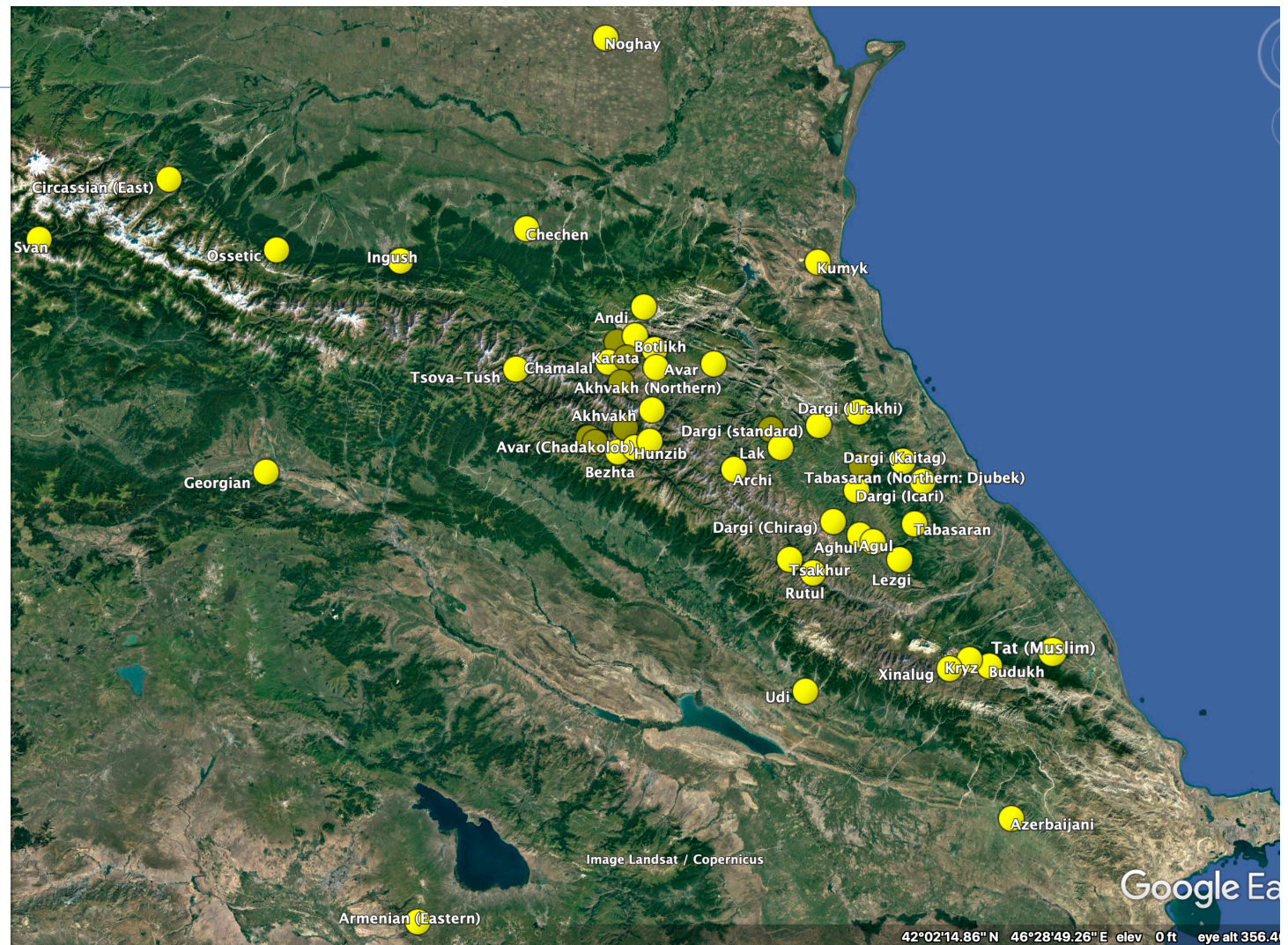
http://lingvarium.org/raznoe/publications/caucas/alw_cau_content.shtml



The N-D languages (and neighbors)

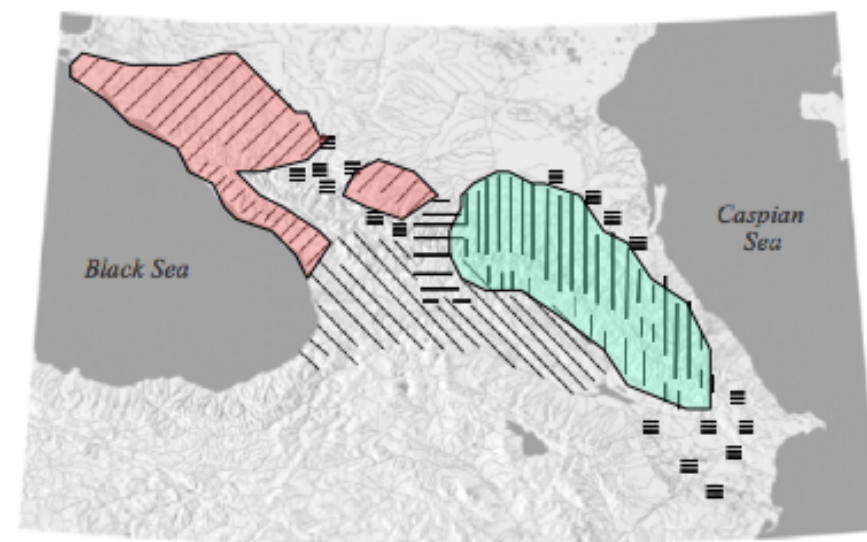
Autotyp database
languages

<https://github.com/autotyp/autotyp-data>



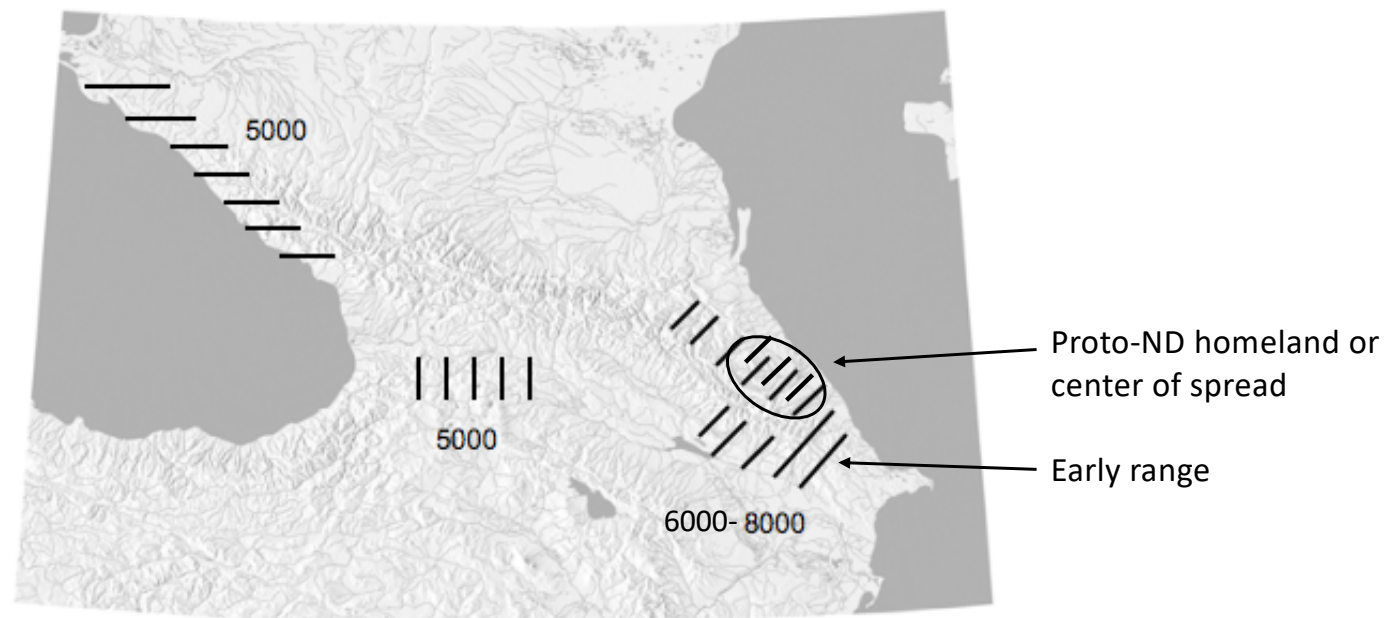
Approximate ranges of endemic and indigenous language families,
early 19th century

Color = families with ranges
much reduced in the Russian
conquest of the Caucasus
(West Caucasian and Nakh-
Daghestanian)

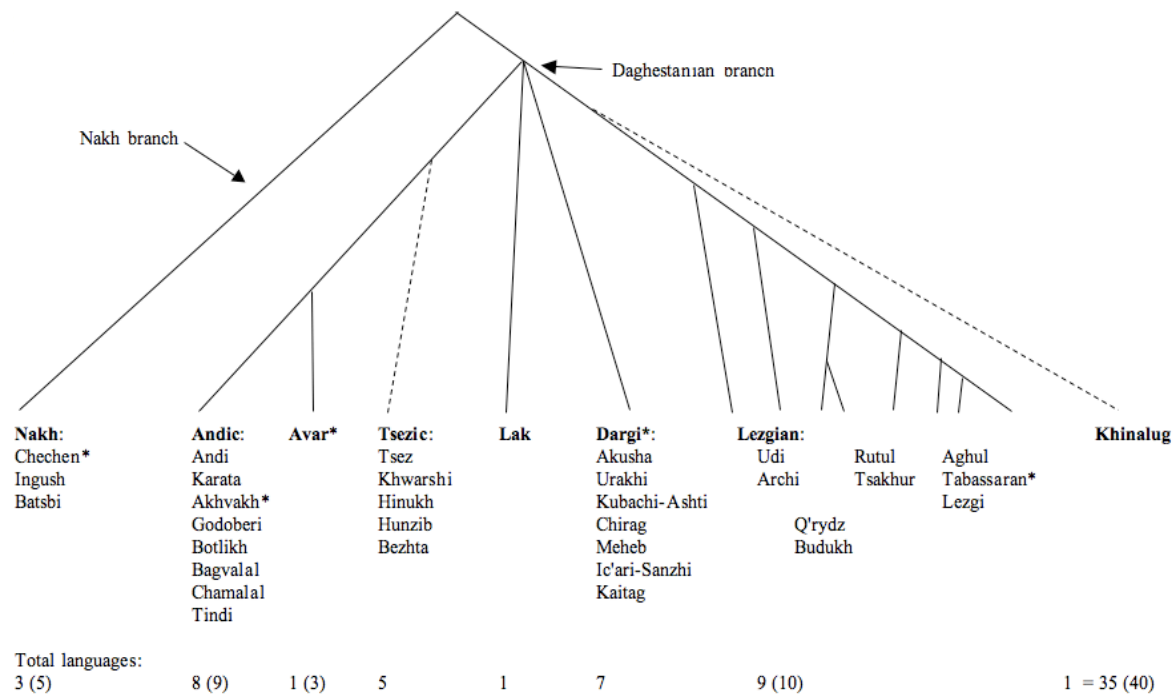


- /// West Caucasian
- ||| Nakh-Daghestanian / East Caucasian
- \\ Kartvelian / South Caucasian
- = Ossetic (Indo-European)
- ≡ Turkic: Karachay-Balkar (west), Kumyk (east), Azeri (south)

Approximate homelands of endemic language families, and approximate ages
(corrected for long-term adjacency and inter-branch borrowing)



The Nakh-Daghestanian (East Caucasian) family tree



Dashed line = possibly earlier branch (distinct branch of Daghestanian)

* = Usually treated as one language but actually subsumes two or more mutually unintelligible "dialects".

What is the evidence for claiming an age of 6000+ years for N-D?

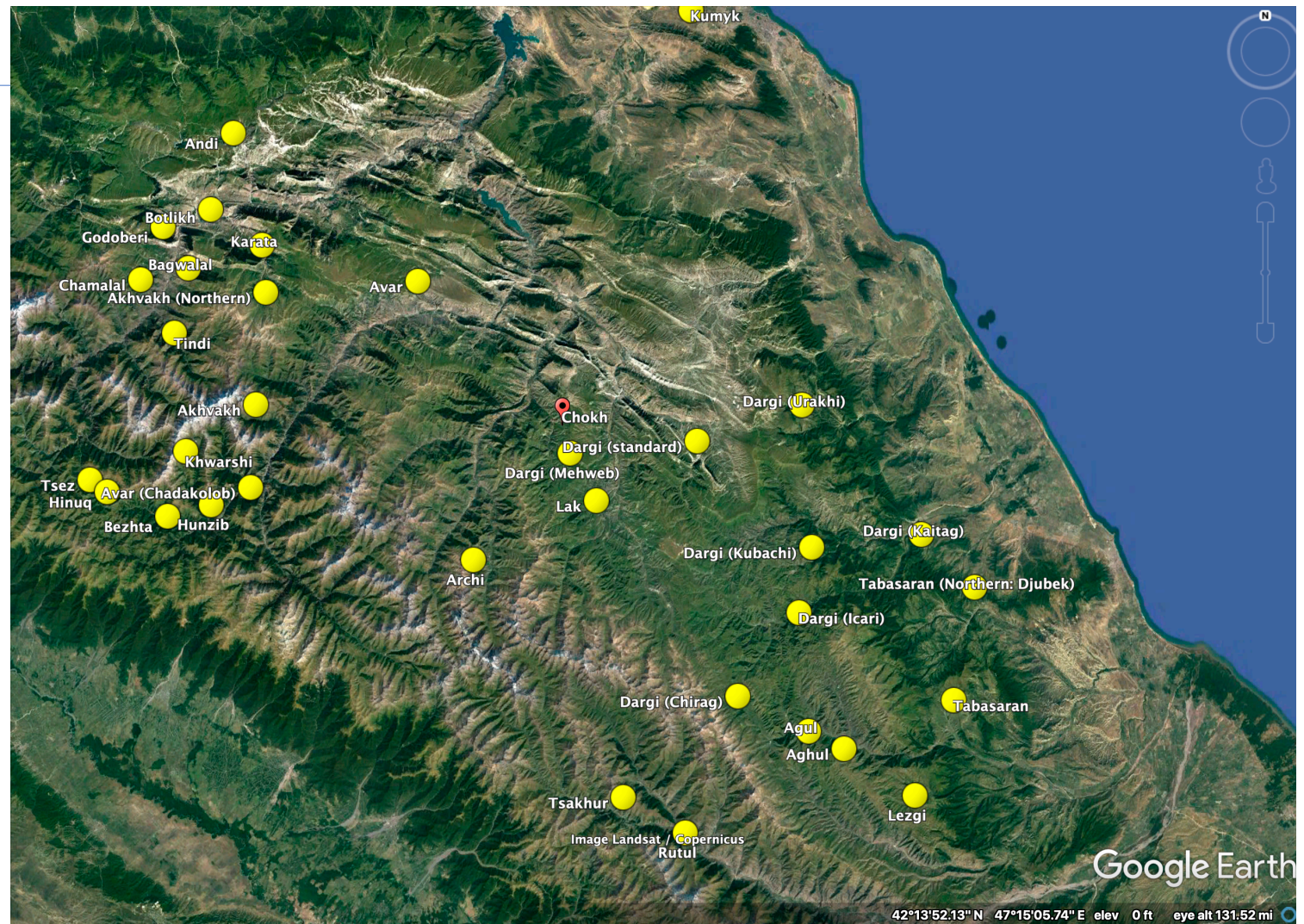
1. Early Neolithic site in Chokh (highland Daghestan), c. 6000 BP ? 8000 ?
General continuity of architecture, artifacts, etc. to historical times

2. Reconstructible Proto-N-D vocabulary:
Early domesticates (sheep, cattle, grain, bean)
No second products *
No 'horse', 'wheel', etc.
No metals other than decorative

* Except: Nakh 'cheese' = Dagh. 'butter'; ND 'unspun wool', ND 'felt'

3. Lexicostatistical dates: c. 6000 (JN, Wolfgang Schulze), but with no correction for adjacency and likely early loans
(some undetectable; main problem: correspondences not well enough worked out)

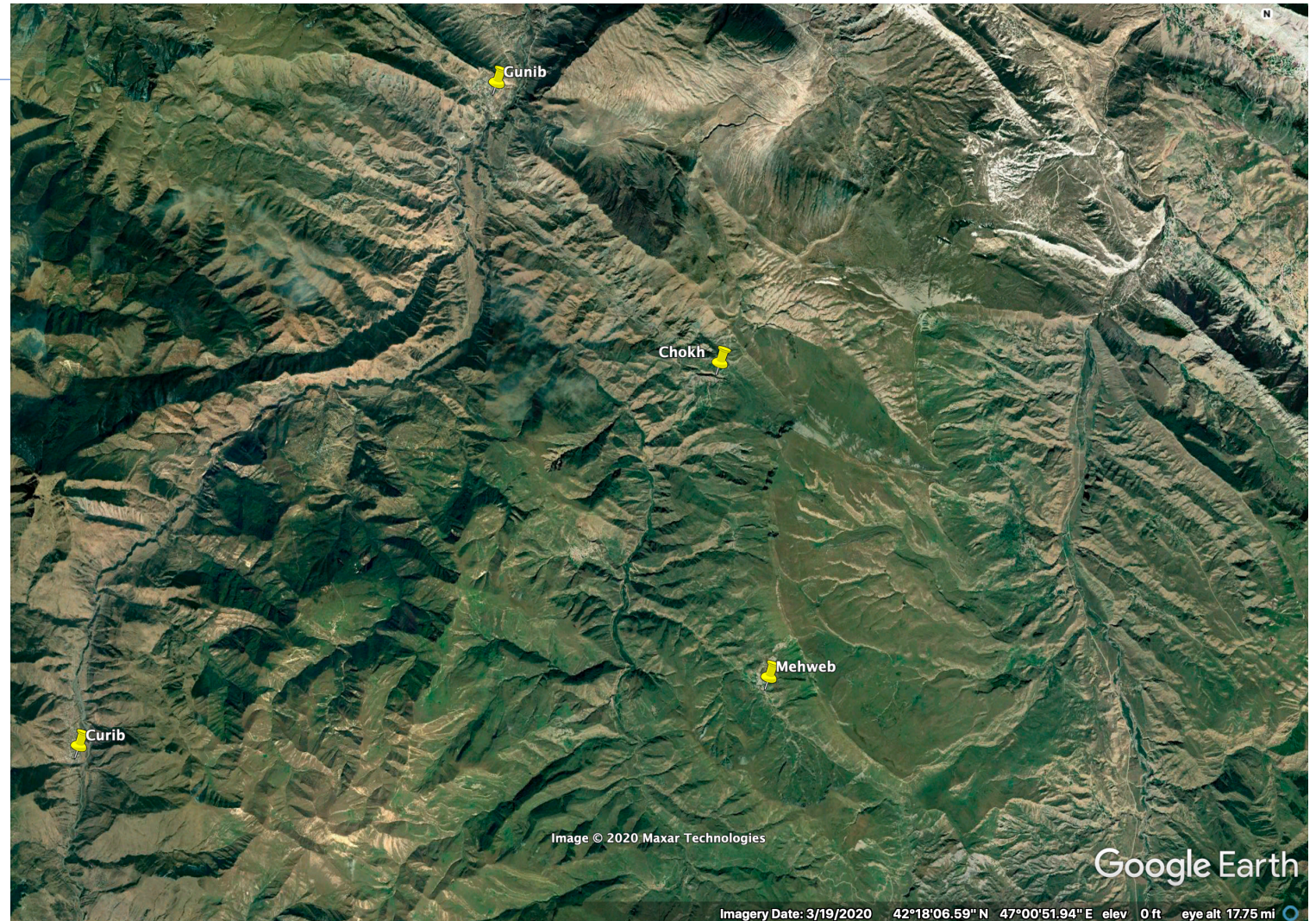
Chokh



Chokh

in context

(Avar Gunib and Curib on the Karakoisu, Dargwa Mehweb to the south, Lak plateau to the east and southeast. Chokh is Avar-speaking today, but the formation and spread of Avar occurred millennia later than the original Chokh settlement.)



Population structure: Daghestan

Several one-town languages; many small languages spoken in a few adjacent towns/"villages"

What were the towns?

Some had markets. Nearly all had cottage industries, many highly productive.

Andi towns produced Caucasian felt coats (Russ. *burka*, Cauc. *burtina* = Andi 'felt') in huge numbers (80,000 some years) and marketed them all over the Caucasus.

They were **city-states**.

Each had a government (not just a clan or council of elders)

Free to join or leave any confederacy (including the Avar khanate)

Conducted their own foreign policy

Had their own codes of law, often written

Genetically: As a result of endogamy, highland towns were highly inbred.

Internally very homogeneous

But the whole Caucasus is genetically the second most diverse population on earth, after only Africa.

Population structure: Nakh peoples

Large languages spoken over large territory.

Dialect differences follow major river canyons.

Villages (highlands, some lowlands): No government other than council of clan elders.

Towns founded by and associated with clans (but clans carried out their own legal functions)

Some had markets.

No transhumance.

Daghestanians (Andic, Tsezic) were often employed as herders.

No endogamy.

Marriage within the clan was forbidden

Marriage to any known relative was forbidden

Influential families took pains to marry each daughter into a different clan

Result: Huge dense open networks of relatives, *kunak* (guest-host partners), friends, acquaintances.

Growing and maintaining this network was essential to family status and well-being.

It was primarily the work of men.

Landscape: Compared to Daghestan, less steep, less rocky, more forest, more rainfall. Easier travel.

Linguistic geography. Origin and spread of branches.

Verticality

Transhumance. Working-age male population spent winters in lowlands, with winter pastures, jobs or businesses in cities, seasonal labor.

Markets in lower towns.

Lowland languages were larger, more influential, vehicles of trade.

Tendency for isoglosses, dialects, and whole languages to spread uphill.

Example: Botlikh (highland) shift to Avar (big, lowland) – except the area around the town of Botlikh, where there was a market that made the Botlikh language useful (to higher highlanders).

Examples: Avar-Andic-Tsezic in the Avar sphere

Lezgian in the Samur sphere

How did languages get into the mountains?

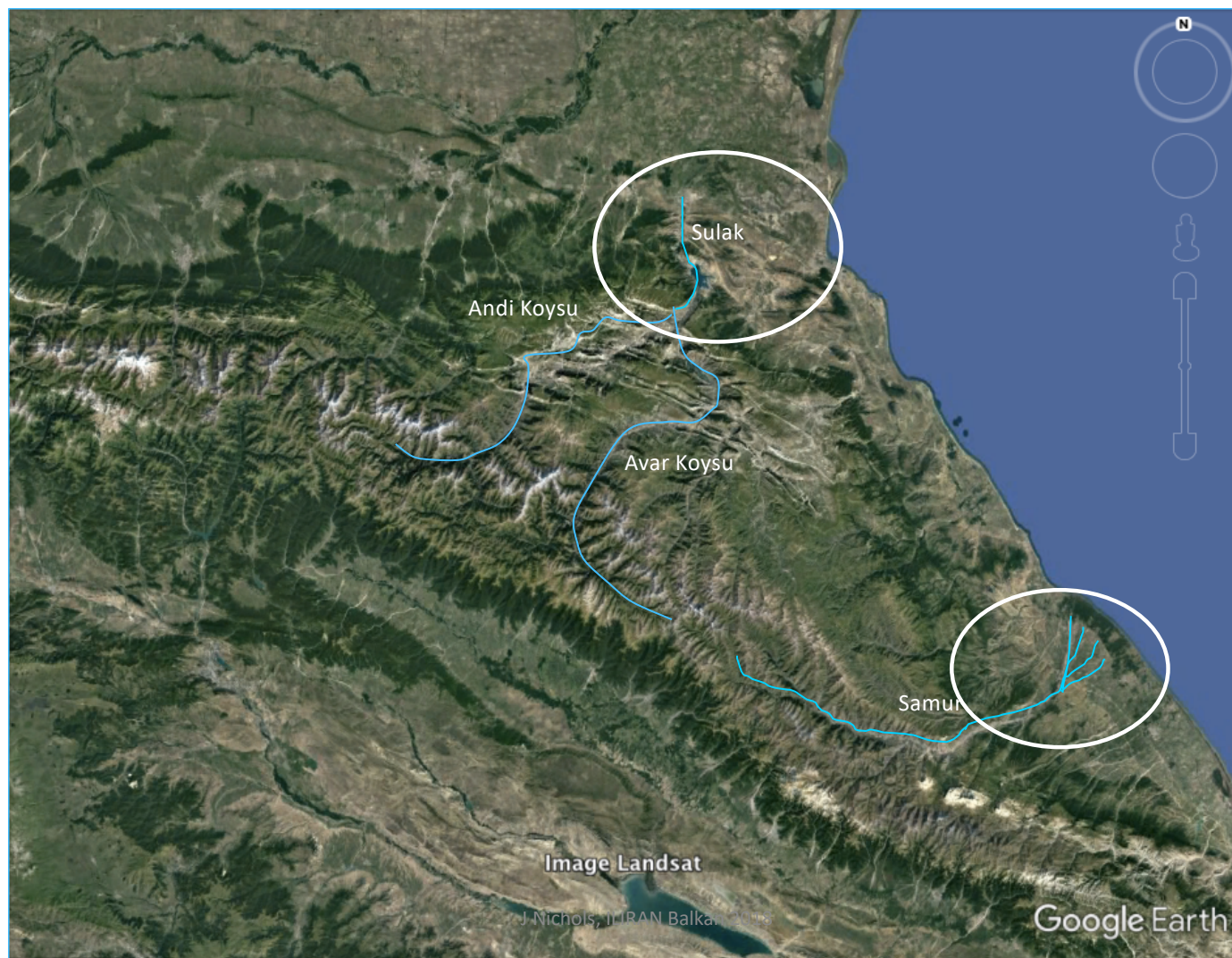
1. Uphill spread (of isoglosses, dialects, languages) along river canyons
2. Main entry points. These are also important market and trade hubs, and they create two area-like **spheres** with lexical, phonological, and grammatical sharings:

The Avar sphere: Entry via Sulak.

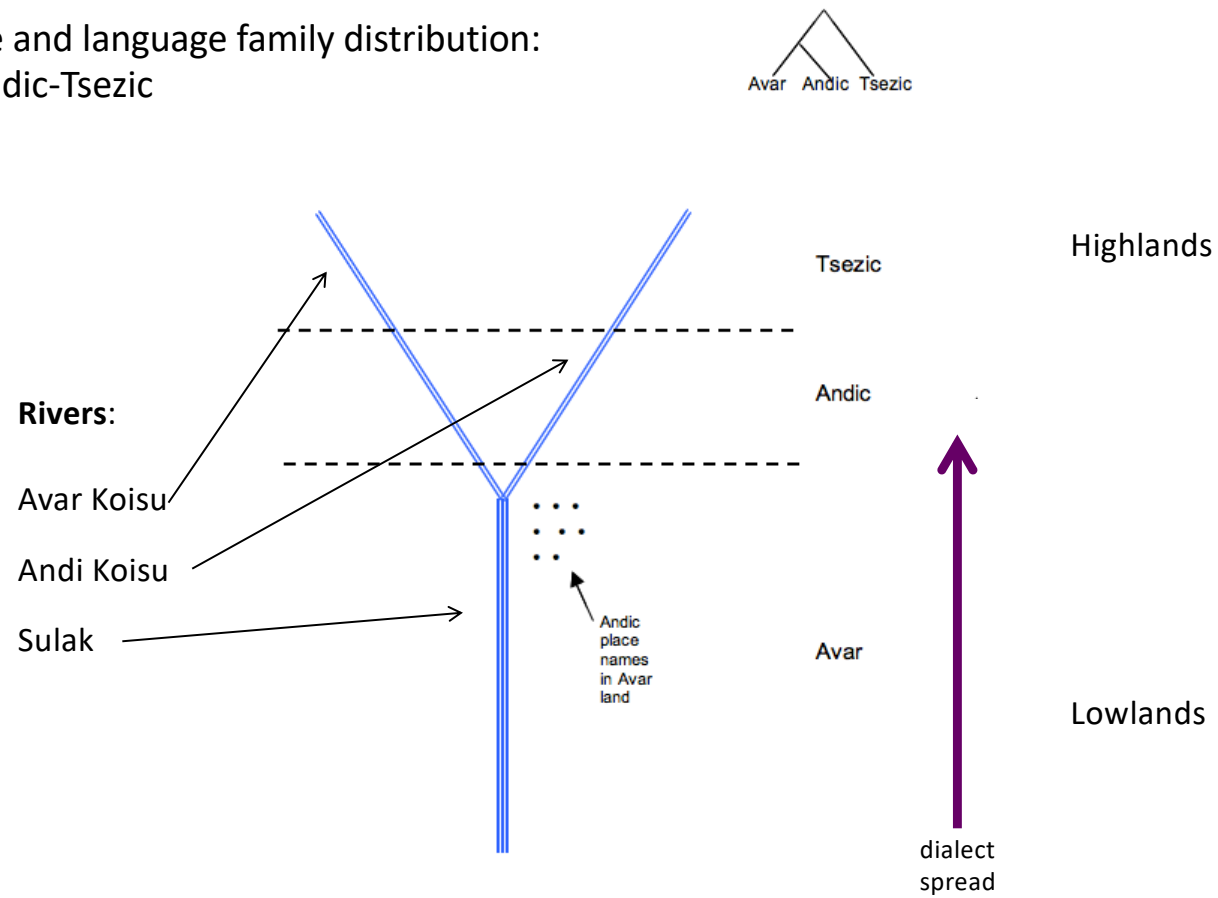
Avar, Andic; Tsezic; Chechen, Ingush, Lak, Dargwa
(i.e. larger than the Avar khanate)

The Samur sphere: Entry via lower Samur.

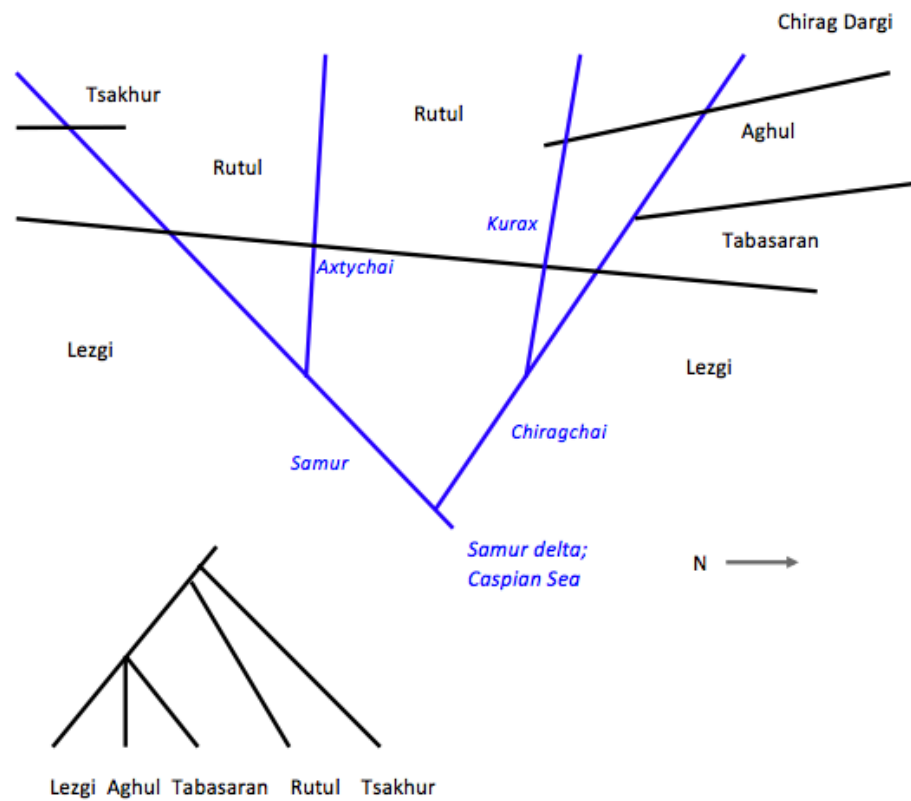
Chiefly Lezgian
(but recall that this is a big, old family)



Altitude and language family distribution:
Avar-Andic-Tsezic



Uphill spread along the Samur



Proto-N-D dispersal

Likely center of diffusion from earliest times: Samur delta and nearby.

Bronze Age: important cities on Caspian coast with apparent close connections to highlands (Tabasaran, Dargwa). Likely N-D occupation coast to highlands from the beginning. (Turkic and Iranian are much more recent immigrants to the Caspian coastal area.)

Nakh: early movement across the Caucasus crest into Alazani valley (Azerbaijan, eastern Georgia).

Probably long residence in south slope foothills and highlands (eastern Georgia);
spillover to north within the last 2000 years (lowland Chechen contact with Turkic early on)

Avar-Andic-Tsezic: Not known how the ancestor moved to the lower Sulak area.

Lak ?? Landlocked highland branch (the only one); history unknown.

Dargwa ?? Presumably, entries from Caspian coast along several rivers.

Khinalug, Lezgian: The core of the family, continuing to send branches out and uphill

Structural typology:
Phonology

The N-D phonological signature

Complex consonant inventories. Typically:

3 or more manners. t t' d tt /t/ usually [t^h]
Uvular, sometimes lateral, sometimes pharyngeal series

Vowel systems vary in size:

3 or 4 vowel qualities:	Lak, several Dargwa	} ± length, nasalization
5	Avar, most Andic	
6-8	most Tsezic, most Lezgian; Nakh	
9-10	Kryz, Budukh, Khinalug	

Pharyngealization

Epiglottalization vs. true pharyngealization

Segment? syllabic feature? consonant feature? vowel feature?

Syllable structure fairly simple: mostly CVRC

Tones ... (Clear but limited in Ingush. Debated for Daghestanian.

Pharyngealization:
Kodzasov 1986,
1987;
Tones: Kibrik &
Kodzasov 1988,
1990, S. V. Kodzasov
p.c.

Phonological complexity

Segmental: Size of inventory.

Consonants: Mostly high.

Vowels: Greatly variable.

Syllable structure: Maximum number of consonants per syllable (combined onset and coda).

Fairly simple in Proto-ND; some later changes such as vowel-zero alternations, fusion of autogender proclitics.

Transparency: Distance between underlying and surface

Avar sphere: High. (Minimal distance, high transparency, shallow phonology.)

Lezgi, Lezgian lowlands: High to fairly high.

Nakh: Fairly high except for schwa-zero alternations

(nonetheless, considered "difficult" by Caucasians) (cf. Georgian, considered "easy")

Daghestanian highlands:

My impression: allomorphy is the main obstacle

(and its conditioning is not very transparent)

(cf. Georgian: high; West Caucasian: very low, extremely opaque)

Complexity and sociolinguistics

Measuring complexity

Enumerative complexity: Number of items in an inventory or system

My measure: Number of obstruent manners, vowel qualities, consonants per syllable; tones, phonation
Number of inflectional categories in the finite verb (WALS: inflectional synthesis)
Number of inflectional categories in the noun
Number of basic word orders, alignments

Non-canonicity-based complexity (informational complexity, Kolmogorov complexity)

Amount of information required to describe the system

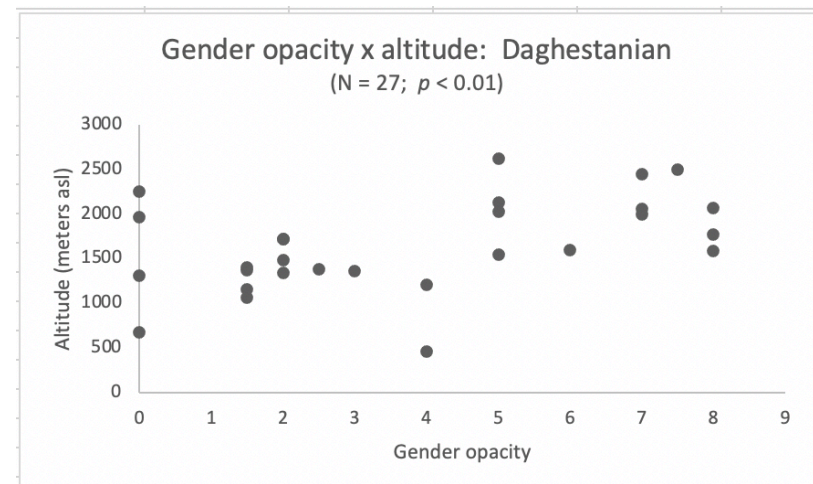
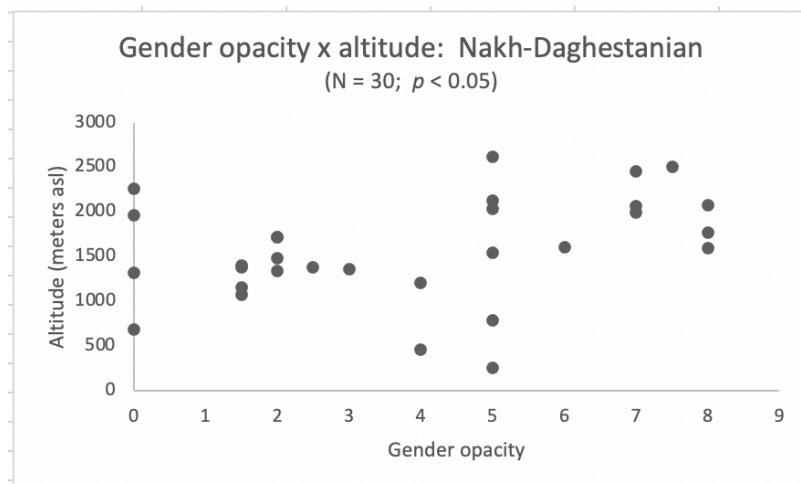
My measure: Count the non-transparencies. Inflectional classes (endings; stems); non-canonicalities in inflectional paradigms (syncretism, allomorphy, zero endings, multiple marking, discrepant positions, discrepant morphological classes, ...)

Complexity and altitude in Daghestan

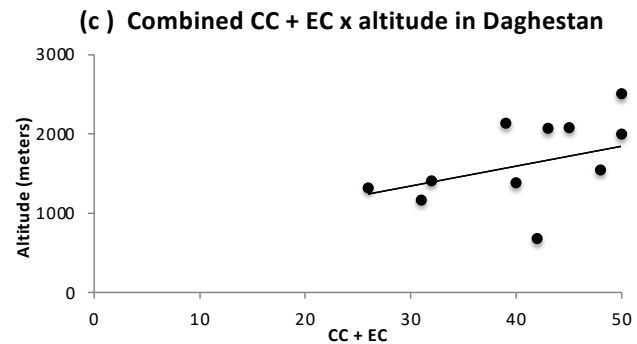
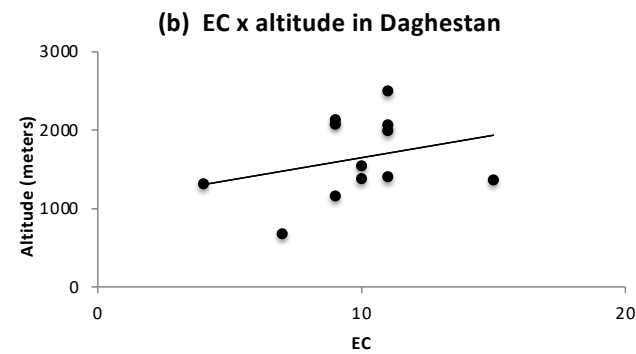
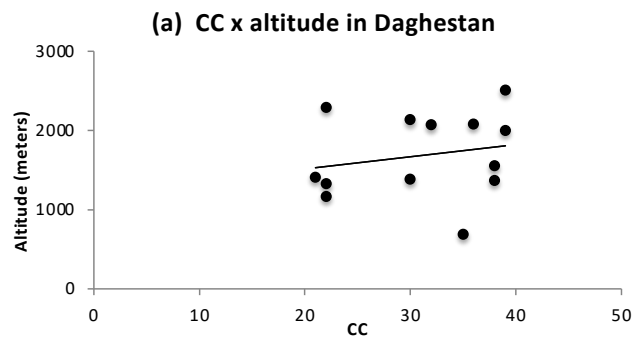
Higher altitude = higher complexity.

Sociolinguistic isolation means higher complexity; history of spread or inter-ethnic use means decomplexification.

Opacity of gender agreement marking x altitude



Complexity and altitude in the Caucasus



CC = "canonical complexity";
EC = enumerative

Caution: Older data, under revision.

Trendlines show slope. Positive correlation of complexity and altitude is appreciable but not significant.

Complexity and sociolinguistics: the Avar sphere (eastern Caucasus)

Languages of the Avar sphere and their sociolinguistic histories		CC	EC	CC + EC
Andic languages	(long expansive; decomplexification expected)	28	10	38
Avar	(recently expansive; some decomplexification expected)	36	10	46
Hinuq	(early expansion, much subsequent Avar-Andic contact)	33	9	42
Hunzib	(early expansion, less Avar-Andic contact)	49	11	60
Lak	(isolated, but fairly large and unified)	42	10	52
Ic'ari Dargwa	(isolated, fairly small)	45	15	60
Tsakhur	(isolated, small; complexification expected)	41	9	50

Caution: Data under revision.

Complexity and sociolinguistics: the Avar sphere (eastern Caucasus)

Languages of the Avar sphere and their sociolinguistic histories		CC	EC	CC + EC	
Andic languages	(long expansive; decomplexification expected)	28	10	38	←
Avar	(recently expansive; some decomplexification expected)	36	10	46	←
Hinuq	(early expansion, much subsequent Avar-Andic contact)	33	9	42	??
Hunzib *	(early expansion, less Avar-Andic contact)	49	11	60	←
Lak	(isolated, but fairly large and unified)	42	10	52	
Ic'ari Dargwa	(isolated, fairly small)	45	15	60	←
Tsakhur *	(isolated, small; complexification expected)	41	9	50	

* Topmost language along a river.

○ ← expansion

○ ← isolation

Complexity and sociolinguistics: The Samur sphere (southeastern Caucasus)

Languages of the Samur sphere and their sociolinguistic histories		CC	EC	CC + EC	
Lezgi	(expansive, large, inter-ethnic)	27	4	31	←
Udi	(now small, isolated; formerly large, expansive?)	41	7	48	
Archi *	(isolated, small; complexification expected)	36	11	47	
Tsakhur *	(isolated, small; complexification expected)	41	9	50	

Morphology

The N-D morphological signature

Gender. Partial category. Occupies same (phonological) slot as root initial. *

Minimal or no person category. Avar sphere, Lezgian.

Person-number A and O clitics: Dargwa, Lak

and person hierarchies: A or S/O is indexed, depending on position in hierarchy: 2 > 1 > 3 (Ic'ari)

Auto-gender *

Inclusive-exclusive

Noun-based lexicon. Verbs as closed class; light verb constructions. (Especially in the southeast.)

ADJ suffix; adjective as part of speech *

Noun case and number inflection with extensions

(Daghestan only) Large case inventories with two-morpheme suffixes

Ancient verb prefixes in same slot as root-initial consonants *

More recent accretion of local/directional prefixes

Event structure: Bounded verb is basic, continuous derived *

* More below.

Gender

Partial category.

Verbs: Only a minority have a gender slot in Nakh; about half in Avar; most or nearly all in Dargwa and highland Lezgian.

Gender index occupies same segmental slot as verb initial.

Ingush	tuox-	'strike'
	d.iett-	'beat, strike.PLC' (<i>jiett, diett, biett</i>)

Possible analyses:

- (1) Gender is marked by mutation of the initial consonant.

The initial consonant of 'beat.PLC' above is mutable.

- (2) Gender is marked by prefixation on vowel-initial verbs.

The verbs above: {tuox}, {-iett}

Problem: Vowel-initial verbs without gender, e.g. *oal* 'say'.

Answer: Such verbs begin with a glottal stop: /ʔoal/

Problem: (a) Some languages don't have a phonemic /ʔ/

(b) Ingush: Any syllable-initial vowel automatically gets a /ʔ/ onset.

Auto-gender

Ordinarily, cross-linguistically, gender is covert on nouns and marked only in agreement.

But a few nouns have an initial consonant identical to their gender marker.

Selected Nakh-Daghestanian cognate nouns belonging to B gender (gender 3). Some have initial *b-* or *m-* or their reflexes. Autogender prefixes underlined. Blank = no cognate found. Blue = words with non-gender initials, showing that gender was not originally part of the root.

	<i>sun</i>	<i>moon</i>	<i>eye</i>	<i>boar</i>	<i>nettle</i>	<i>louse</i>	<i>ram</i>
Ingush	<u>m</u> aalx	<u>b</u> utt	<u>b</u> ^c ar-jg	<u>h</u> ^c aqa	<u>n</u> itt	<u>m</u> aza	ka
Avar.chd	<u>b</u> aq'	<u>m</u> oc'	<u>b</u> er	<u>b</u> oton	<u>m</u> ic'	nac'	kwi
Lak	<u>b</u> argh	<u>b</u> arz		<u>b</u> urk'	<u>m</u> i ^c ch'	nac'	ku
Dargwa.std	<u>b</u> erh9i	<u>b</u> ac	<u>h</u> ^c uli		<u>n</u> iz	ner7	kiha
Lezgi.axty *	<u>r</u> agh	<u>w</u> arz	<u>u</u> l	<u>w</u> ak		net	
Xinalug	<u>y</u> nq'	<u>v</u> ac'	<u>p</u> il		<u>m</u> ych'	nimc'	ki

* Lezgi has lost all gender agreement, but has fossilized auto-gender.

Auto-gender, cont.

Most languages have a few words with variable auto-gender (derivational):

	'brother'	'sister'
Ingush	<i>vosha</i>	<i>jisha</i>
Avar.chd	<i>wac</i>	<i>jac</i>
Akhvakh	<i>wacci</i>	<i>jacci</i>
Lak	<i>usswu</i>	<i>ssu</i>
Dargwa.icari	<i>ucci</i>	<i>rucci</i>
Archi	<i>ush-du</i>	<i>dosh-dur</i>
Rutul	<i>shu</i>	<i>rishi</i>

Inflectional: Ic'ari Dargwa agreement of possessed noun with possessor.

<i>w/∅</i>	<i>r</i>	<i>b</i>	<i>d</i>	
w.al ^C	r.al ^C	b.al ^C	d.al ^C	'face'
w.arkkw	r.arkkw	b.arkkw		'inside' (idioms only)
w.agh	r.agh	b.agh	d.agh	'waist'; 'middle' (D)

Otherwise, head nouns never agree with possessors in N-D.

Auto-gender, cont.

In most languages, auto-gender replaces the noun initial. But clusters in Nakh and Khinalug:

	<i>Chechen</i>	<i>Ingush</i>	<i>Batsbi</i>	<i>Khinalug</i>
'vein, tendon'	pxa	pxa	pxa	
'scapula'	pxanar	pxandar	pxaner	
'wool fleece'	txa	txa	txe	kxa
'ceiling, roof'	txou	txou		
'dew'	txi	txyr	txir 'hoarfrost'	
'flea'	segal	sagal	psik'	
'ice'	sha	sha	psha	

Other Khinalug examples: *psy* 'bear', *pxunc* 'star', several others.

Auto-gender, cont.

What is auto-gender, in origin ??

Words that nearly always have it: 'sun', 'moon' (unique reference)

Often: parts of wholes

Probably: fused former articles (fused with words that were most often definite).

Articles agreed in gender in Proto-N-D.

Modern N-D languages do not have articles.

ADJ suffix

Adjectives are an open class in N-D.

(Often not large, as lexicalized participles intrude in their range.)

But primarily a dependent class.

Nearly every language has some functions where bare adjectives cannot be inflected and function as words but must be suffixed.

ADJ = that suffix. Produces inflectable adjective word from adjective stem.

I.e. adjectives are bound, not free, words in many contexts.

(This is unusual, for languages with a dedicated adjective class.)

Adjectives are most likely to be dependent when in light verb constructions and suffixally derived verbs:

Ingush shal-lu
 cold-INTR
 'get cold'

 shal-d.u
 cold-MAKE
 'chill, make cold'

Dargwa ara + b.i7
 healthy + B.become
 'get well'

 dargh + b.uq
 firm B.leave
 'lose balance' (van den Berg 2001:26)

ADJ suffix , cont.

Rutul	zarak - dy lively-ADJ [[stem] word] 'lively'	zarak - dy - byj - dy lively - ADJ - RESTR - ADJ 'the lively one (of a group)'	(RESTR adds restrictive semantics) (Maxmudova 2001)
Tsakhur	djan - naï - n health-ADJ-ADJ [[[N] - ADJ] adjective word] 'healthy' ('having health')	(Sosenskaja 1999:193)	

Lak: Adjectives are bound; to be modifiers or NP heads they take –ssa ADJ or –ma/mur/mi RESTR:

qun-ssa	adimina	qun-ma	adimina
big-ADJ	person	big-RESTR	person
'a big/important person'		'the big person'	

But Udi, Lezgi: Unsuffixed in all functions.

Example of a light verb construction.

The lexical piece is Arabic in origin. *p-* in northern languages probably via Kumyk.
The verb is 'do, make' unless otherwise indicated.

Chechen	oila j.u	
Avar	pikri habize	
Godoberi	pirku ĩhi	
Hinuq	pikru b.uwa	
Lak	pikri b.ullan	'give'
Dargwa (std)	pikri+Ø-ik'es, pikri+b.ar	'say'; 'make/do'
Lezgi	fikir awun	
Tsakhur	fykyr hāʔas	
Udi	fikir+b-esun	
Khinalug	fikir kiri	

Ancient verb prefixes in same slot as gender and initial consonant

Chechen, Ingush	laq'	'go dry, dry up'	Initial:	*l-
Avar	b.aqq'w-a-			Gender
Andi	b.eqq'u-			Gender
Lak	qq'aqq'-			Reduplicate
Lezgi	q'ur-			None
Archi	q'ur-			None

Some Nakh-Lak discrepancies in cognates:

<i>Nakh</i>		<i>Lak</i>		<i>Comment</i>
d.uux-	'put on'	laxxan	'put on'	of clothing
d.aash-	'shave'	b.ašin	'sweep (floor, etc.)'	
		lišin	'wipe, wipe off'	
uoz-	'milk (a cow); pull'	ttizin	'milk (a cow)'	

These are fairly frequent, within and between branches.

Evidently this was systematic in Proto-ND. Maybe **all** verb-initial consonants are secondary ??

Ablaut in declension

		Nominative	Oblique	Plural
'bull'				
	Chechen	stu	star-	star-
	Dargwa	unc	unc-	anc-
	Archi	ans	ans-	uns-
'moon'				
	Chechen	butt	batt-	batt-
	Bezhta	boco	bico-	bico- / boco-
	Lak	barz	zur-	zur-
	Tsakhur	waz	wuz-	wuz-
	Archi	bac	bac- / boc-	

*u alternates with *a (or similar). But the original distribution is hard to discern.

Maybe Proto-ND did not have the ergative alignment its daughters have ??

Event structure

Bounded (punctual, telic, ingressive) is basic, continuous derived. Ingush examples

Bounded

twous 'fall asleep'
ghott 'fly off, fly away, take off'

Continuous

twaisaa ull 'be asleep'
ghattaa liel 'fly' (go.around flying)

or ingressive-stative, with only tense-aspect inflection differentiating:

d.uux	'put on (garment)', 'dress';	'wear'
tull	'put on (hat)'	'wear'
d.ouz	'get acquainted; recognize'	'know, be acquainted'

Generalization: Basic verbs are bounded. Some are also continuous, but all are at least bounded.

Syntax

The syntactic signature of ND

Pan-ND traits are not particularly distinctive:

Head-final order, clause chaining, highly configurational (hierarchical clause and phrase structure)
Ergative morphological alignment (sometimes syntactic)

Subfamily and regional traits that are distinctive:

Nakh and Avar sphere:	AOV/V2 word order
	Type 5 clitics in clause chaining; verb reduplicated to host clitic
	O ambitransitivity (radical P alignment)
Udi (and nearby?)	Endocclisis
Eastern highlands:	Person-number argument clitics with person hierarchies

Syntax and lexicon

Very little part-of-speech flexibility between noun and verb
Noun-based lexicon, verbs as closed class, light verb constructions

Conclusions

Why is N-D of interest?

History: Possibly the sole case of a first farming language still spoken where it first brought domestication. And close to Mesopotamia; first farming is very early.

Mismatches in ablaut distribution, $\pm$ verb prefixes, $\pm$ gender slot suggest that Proto-ND was morphologically very different from its daughters.

Auto-gender suggests articles, though no daughter language has articles.

Typology:

Verbs as closed class, noun-based lexicon.

Adjectives are a separate part of speech, yet morphologically dependent.

Event structure: Bounded is basic.

Auto-gender.

Population, sociolinguistics, etc.

Full endogamy in highland Daghestan and its consequences for genetics.

Thanks!

Words Bones Genes Tools, U. Tübingen

Kone Foundation, NSF, Wissenschaftskolleg zu Berlin

Russian Academic Excellence Project 5-100, Higher School of Economics, Moscow

Linguistic Convergence Lab, HSE, Moscow



johanna@berkeley.edu

References

- Aglarov, M. A. 1988. *Sel'skaja obschina v nagornom dagestane v xvii-nachale xix v.* Moscow: Nauka.
- Amirkhanov, Kh. A. (Khizri Amirkhanovich). 1987. *Chokhskoe poselenie : Chelovek I ego kul'tura v mezolite I neolite gornogo dagestana.* Moscow: Nauka.
- Bickel, Balthasar and Johanna Nichols. 2005. Inflectional synthesis of the verb. In *World Atlas of Language Structures*, ed. Martin Haspelmath, Matthew Dryer, Bernard Comrie, and David Gil, 94–97. Oxford: Oxford University Press.
- Also in *World Atlas of Language Structures Online* (2013). <http://wals.info/chapter/22>
- Dobrushina, Nina. 2020. Language size, multilingualism, and marriage patterns in Daghestan. Linguistic Convergence Lab, HSE University, Online course on East Caucasian languages.
- Abstract and video: https://ilcl.hse.ru/en/east_caucasian/schedule
- Karafet, Tatiana M., Kazima Bulayeva, Johanna Nichols, Oleg A. Bulaev, Farida Gurganova, Jamilia Omarova, Levon Yepiskoposyan, Olga V. Savina, Barry H Rodrigue, and Michael F. Hammer. 2016. Coevolution of genes and languages and high levels of population structure among the highland populations of Daghestan. *Journal of Human Genetics* 61.181–191.
- Kibrik, A. E. and S. V. Kodzasov. 1988. *Sopostavitel'noe izuchenie dagestanskix jazykov: Glagol.* Moscow: Moscow University.
- Kibrik, A. E. and S. V. Kodzasov. 1990. *Sopostavitel'noe izuchenie dagestanskix jazykov: Imja. Fonetika.* Moscow: Moscow University.
- Kodzasov, S. V. 1986. Faringal'no-laringal'noe suzhenie v dagestanskix jazykax. In *Aktual'nye problemy dagestansko-naxskogo jazykoznaniya*, ed. G. A. Klimov, 16–44. Maxachkala: AN SSSR.
- Kodzasov, S. V. 1987. Pharyngeal features in Daghestanian languages. *Proceedings of the XIth International Congress of Phonetic Sciences*, 2.
- Maxmudova, S. M. 2001. *Morfologija rutul'skogo jazyka.* Moscow: AN.
- Nichols, Johanna. 2020. Canonical complexity. In *The complexities of morphology*, ed. Peter Arkadiev and Francesco Gardani, 163–192. Oxford: Oxford University Press.
- Nichols, Johanna. 2019. Why is gender so complex? new typological considerations. In *Grammatical gender and linguistic complexity*, ed. Francesca Di Garbo and Bernhard Wälchli, 63–92. Berlin: Language Sciences Press.

(References, cont.)

- Nichols, Johanna. 2013. The vertical archipelago: Adding the third dimension to linguistic geography. In *Space in Language and Linguistics*, ed. Peter Auer, Martin Hilpert, Anja Stukenbrock, and Benedikt Szmrecsanyi, 38–60. Berlin: Mouton de Gruyter.
- Nichols, Johanna. 2003. The Nakh-Daghestanian consonant correspondences. In *Current trends in Caucasian, East European, and Inner Asian linguistics: Papers in honor of Howard I. Aronson*, ed. Dee Ann Holisky and Kevin Tuite, 207–251. Philadelphia: John Benjamins.
- Nichols, Johanna. In preparation. *The languages of the Great Caucasus range*.
- Sosenskaja, Tat'jana B. 1999. Atributivnaja reprezentacija. In *Elementy tsaxurskogo jazyka v tipologičeskom osveščanii*, ed. A. E. Kibrik, 193–201. Moscow: Nasledie.
- Trudgill, Peter. *Sociolinguistic typology: Social determinants of linguistic structure and complexity*. Oxford: Oxford University Press, 2011.
- van den Berg, Helma. *Dargi folktales: Oral stories from the Caucasus with an introduction to Dargi grammar*. Leiden: CNWS, 2001.
- Wixman, Ronald. *Language aspects of ethnic patterns and processes in the North Caucasus*. Chicago: University of Chicago, 1980.
- Zohary, Daniel, Maria Hopf, and Ehud Weiss. 2012. *Domestication of plants in the Old World*. Oxford: Oxford University Press.