

The Proto-Sumerian Language Invention Process

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A lexicon of Sumerian which is organized on the basis of phonetic structure, starting with phonetically simple structures and progressing to more complex phonetic structures, has revealed the process by which the proto-Sumerians invented their language.

In Sumerian, one can see that phonetically simple words correspond to early, basic concepts and phonetically complex words correspond to later, culturally advanced concepts. When the proto-Sumerians began inventing their language, they started with vowel-only words (e.g., a, 'water') and quickly progressed to three different phonetic structures involving consonants, namely:

vowel-consonant (VC, e.g., ab, 'window');

consonant-vowel (CV, e.g., ba, 'to give'); and

vowel-consonant-vowel (VCV, e.g., aba, 'lake').

The capacity of the first generation, starting as young adults, to master a large vocabulary would have been limited. There would have been a period of stability with the simple V, VC, CV, and VCV word structures. But future generations, starting as young children, began to combine the V, VC, CV, and VCV words to utilize the extended possibilities of the structure:

consonant-vowel-consonant (CVC, e.g., dab, 'to hold, take').

The CVC structure accounts for about 30 percent of all Sumerian logograms and appears to have been normative for new word formation for a long time.

Sumerian was an agglutinative language not just in its verb construction, but also in its noun or morpheme construction. An agglutinative type of language is one in which words are built up by stringing forms together. Simple structures like V, VC, CV, and sometimes VCV appear to derive their meanings by drawing upon articulatory symbolism, but the more complex phonetic structures, starting with VCV (e.g., aba, 'lake' = ab, 'niche', + a, 'water', or ída, 'river' = éd, 'to issue', + a, 'water'), often consist of sequences of smaller words combined to describe additional phenomena.

I will give illustrative examples drawn from various noun structures later in this paper. First I want to present a comprehensive list of all the vowel-only (V) words, vowel-consonant (VC) words, and consonant-vowel (CV) words. This lets you see the earliest vocabulary of proto-Sumerian.

a, e₄: n., water; watercourse, canal; seminal fluid; offspring; father; tears; flood.

é: house, household; temple; plot of land.

i: n., cry of pain (derived from ér, ír, 'tears; complaint'?).

v., to capture, defeat, overcome (cf., éd, è; i, 'to sprout')

ú: n., plant; vegetable; grass; food; bread; pasture; load.

v., to nourish, support.

adj., strong, powerful (man).

ù: n., sleep (cf., u₅). [according to S. Lieberman, u, ù, and u₄ were pronounced /o/]

v., to sleep.

u_(3,4,8): n., an expression of protest; cries, screams; the grunting, panting of battle; fight, dispute.

v., to bend over.

u₅: n., male bird, cock; totality; earth pile or levee; raised area (sometimes written ù).

v., to mount (in intercourse); to be on top of; to ride; to board (a boat); to steer, conduct.

adj., (raised) high, especially land or ground (sometimes written ù).

u₁₈: huge.

u₂₀: barley.

ab: window; opening; niche, nook (cf., aba).

áb: domestic cow (a, 'water, liquid', + íb, 'middle').

íb: corner, angle, nook.

íb, éb: n., middle; waist; loins; thighs.

v., to be angry; to flare up in anger; to curse, insult.

ub: corner, angle, nook; a small room.

^(kuš)ub_{3,5}: a drum.

ub₄: cavity, hole; pitfall.

ad₄: lame, cripple.

éd, è, i: to go out, emerge; to send forth; to lead or bring out; to rise; to sprout; to be or become visible; to appear as a witness (the final d appears in *marû* conjugation).

èd, e₁₁: to exit; to rise; to descend, set; to bring down (or up); to import; to fetch; to remove; to drain (è-dè(-d) in *marû*).

ud, u₄: n., sun; light; day; time; weather; storm (demon).

prep., when; since.

úd[ÁŠ]: emmer (wheat).

ég, ék, íg, e: n., levee, embankment, dike, bund (a, e₄, 'water', + ig, 'door').

v., to water; to speak, say (e = sing. *marû*, plural *hamtu*, and plural *marû*).

ig: door, entrance.

ug₍₂₎: lion; anger, fury; storm.

ug_{4,5,7,8}: n., death; dead person.

v., to kill; to die (singular and plural *marû* stem; plural *hamtu*, which is sometimes reduplicated; cf., úš).

ug₆, u₆: n., amazement; gaze, glance.

v., to look at; to stare at, gaze; to be impressed.

adj., astonishing.

uh₍₃₎

prep., in front.

en: n., dignitary; lord; high priest; ancestor (statue); diviner.

v., to rule.

adj., noble.

en_(2,3): n., time; enigmatic background.

prep., until.

in: he, she; straw; insult, offense, invective.

ér, ír: n., tears; lamentation; prayer; complaint.

v., to weep.

ír₍₁₀₎: n., sweat; smell, odor, scent; perfume, fragrance.

adj., scented, perfumed, fragrant.

ír₍₁₀₎, er: v., to bring; to lead away.

ur: n., dog; carnivorous beast; servant; young man, warrior; enemy .

v., to tremble.

adj., humble.

ur_(2,3,4): to surround; to flood; to throw overboard; to drag (over the ground) (often with -ni-); to erase, wipe out; to shear, reap, mow (reduplication class).

úr: floor; base; lap, loins; thighs, leg(s); root; trunk of a tree.

ùr: roof; entrance; mountain pass; beam, rafter.

ur₅[HAR]: n., liver; spleen; heart, soul; bulk, main body; foundation; loan; obligation; interest; surplus, profit; interest-bearing debt; repayment; slave-woman.

inanimate pron., it; these, the referenced; his, hers, theirs.

v., to chew; to smell; to belch, burp; to roar; to clog, block; to imprison; to be bowed with grief; to rub something in; to rent.

demonstrative, thus; so; in this way; in the same way; followed by a negation: not at all.

us, uz^{mušen}: domestic goose or duck.

ús, úz [UŠ]: n., side, edge; distance; in geometry: length; height; vertical; perpendicular.

v., to follow; to drive; to come near to, reach; to let reach; to transport, bring; to join; to be next to, border; to moor, dock; to lean against.

us₅, u₈: mother ewe, adult female sheep.

aš: one; unique; alone.

aš₍₅₎: spider.

áš: n., wish; curse (abbreviated tàš ?, ašte ?).

v., to desire; to curse.

aš_{3,4,8}: six (ía, 'five', + aš, 'one').

eš: n., many, much.

v., to anoint.

èš: shrine.

eš_{5,6,16,21}: three.

uš, ús: n., foundation.

v., to support, lift; to stand upon.

Uš: a length measure, reading unknown, = 6 ropes = 60 nindan rods..

úš: n., blood; blood vessel; death.

v., to die; to kill; to block (singular *hamtu* stem).

adj., dead.

ùš: placental membrane, afterbirth.

uš₇: spittle.

uš₈: foundation place, base.

uš₁₁: venom, poison; spittle, slaver; moistening; spell, charm.

ùz, ud₅, ut₅: she-goat.

ba: n., share, portion; rations, wages.

v., to give; to divide, apportion, distribute; to pay (interchanges with bar).

^(ku6)ba: a shelled creature (such as a turtle or a snail); a scraping tool.

bà: liver; liver model; omen.

bi, bé: v., to diminish, lessen.

pron., it.

poss. suffix, 'its' applies to inanimate (things and animals) and collective objects.

demonstrative suffix, this (one), that (one) - in this sense can occur with animates.

conj., and.

art., the.

adv., adverbial force suffix.

conjugation prefix, differentiates the semantic meaning of certain verbs.

bi₆ [BA]: to tear; to tear off (with -ta-).

bu₅: to rush around.

da: n., arm; side; nearness (to someone).

v., to hold; to be near; to protect.

prep., comitative suffix, 'with'; copula, 'and' (mainly in Sargonic date texts).

dé: to pour (often with -ni-); to water; to increase, be full; to shape, form; to instruct; to sink.

dè: ashes.

de₅, di₅ [RI]: to advise; to remove (earth clods) (reduplicated).

de_{6,2}, ^še₆: to bring, carry (-ši- or -ta- denote direction); to continue on (singular *hamtu*).

di: n., lawsuit, case; judgment, decision, verdict; sentence.

v., to judge, decide; to conduct oneself; to go; to escape.

du: to walk; to go; to come (sing. *marû*).

dù('), ^šú: n., work; totality.

v., to build, make; to mould, cast; to erect something on the ground; to raise up; to set up; to plant; to fasten, apply.

du₇: to be finished, complete; to be suitable, fitting; to be necessary; to butt, gore, toss (reduplication class?) (regularly followed by rá).

du₁₄: quarrel, struggle, fight.

ga: n., milk (chamber + water).

ge_(2,6): girl.

gi: reed; length measure, reed = 6 cubits = 3 meters (circular + to sprout).

gi₍₄₎: to surround, besiege; to lock up (circle + to descend into).

gi₍₁₇₎: n., young man (small and thin like a reed).

adj., small.

gí, gé: reed mat.

gi₄, ge₄: to return, come back; to send (back) (with -ši-); to reject, dislike; to restore; to answer (person to whom answer is given resumed by dative prefix, and with -ni-) (circular motion + to go out, send).

gu: string, thread; wool yarn; flax; hemp; snare; net; orig. word for needle (circular + grass-like).

gú: neck; nape; river bank; side; other side; edge; front; land; pulse, chick pea (circular + u₅, 'on top of'; as possible loan from Akkadian cf., Orel & Stolbova #982, *gun- "occiput, neck, nape").

gù: n., noise, sound; voice.

v., to exclaim; to utter a cry (said of an animal) (throat + u_(3,4,8), 'cries, screams').

gu₇, kú: n., food, sustenance; fodder; angle.

v., to eat, swallow, consume, use; to eat up, finish off; to feed, nurse, benefit (with -ni-) (throat + ú, 'food').

ǵá: basket; house; stable.

ǵe₂₆, ǵá: I, myself; my.

ǵu₁₀: my, mine.

ha: precative and affirmative verbal prefix: may; let; indeed.

*ha: fish (not the usual word for fish, but the fish sign may get its syllabic reading of HA from *h 'many' + a 'water' = 'fish', an alternative to the usual ku₆, kua).

há, hi-a: numerous; diverse; assorted; mixed.

hà, hù, a₆, u: ten (usually written: u).

he, hi: to mix [HI archaic frequency: 291].

he₍₂₎: abundance; abundant.

hu: bird (earlier word than mušen).

ia_{2,7,9}, í: five.

ìa, ì: n., oil, fat, cream.

ia₄, i₄: pebble, counter.

ka: mouth [KA archaic frequency: 108; concatenates 2 sign variants].

ká: gate [? KA₂ archaic frequency: 11; concatenates 4 sign variants].

ka₅-(a): fox.

ki: n., earth; place; area; location; ground; grain ('base' + 'to rise, sprout') [KI archaic frequency: 386; concatenates 2 sign variants].

prep., where; wherever, whenever; behind.

ku: to base, found, build; to lie down (reduplication class) [KU archaic frequency: 64; concatenates 3 sign variants].

ku₆, kua: fish (kú, 'food', + a, 'water').

la: abundance, luxury, wealth; youthful freshness and beauty; bliss, happiness; wish, desire.

lá: to penetrate, pierce, force a way into (in order to see); to know; to look after; to have a beard (cf. also, lal).

(li: juniper/cedar tree.

lí: true measure; fine oil.

li₉: to glisten, shine.

lu: n., many, much; man, men, people; sheep.

v., to be/make numerous, abundant; to multiply; to mix; to graze, pasture (reduplication class [?]).

lú: grown man; male; human being; someone, anyone, no one; gentleman.

lù: to disturb, agitate, trouble; to fluster, embarrass; to stir, blend.

ma: to bind.

ma₍₃₎; 𒄠á: to go (Akk. *alaaku*).

(𒄠^{is}) má: boat.

ma₄: to leave, depart, go out.

me, mi; 𒄡e: n., function, office, responsibility; ideal norm; the phenomenal area of a deity's power; divine decree, oracle; cult.

v., to be; the Sumerian copula; to say, tell.

poss. suffix, our.

me_{3,6,7,9}: battle.

me₆: to act, behave.

mí[SAL]: n., woman; female (this pronunciation of the sign found in compound words and verbs or in enclitic or proclitic position, Hallo & van Dijk, p. 85) (cf. also, mu₁₀, munus) (compounds are more likely to preserve an older word).

adj., feminine.

mu: n., name; word; year; line on a tablet, entry; oath.

v., to name, speak.

prep., because.

conjugation prefix, suggests involvement by speaker, used especially before dative infixes, preferred for animate and agentive subjects.

mù, ma₅: to mill, grind; to burn (reduplication class).

mu₅: well-formed, beautiful; plump, fattened.

mu₇: to shout, scream, roar; exorcism ?.

mu₁₀[SAL]: woman; female (cf. also, mí, munus).

na: n., human being; incense.

adj., no.

modal prefix, emphatic in past tense; prohibitive in present/future tense.

na₄; na: pebble, rock, ordinary stone; stone weight; token; hailstone.

na₅: chest, box.

ne(-e), ne.en: this (one); that (one); demonstrative affix.

nè; ní: strength, vigor, violence; forces, host.

ni; na: he, she; that one (human animate pronoun or possessive suffix).

ní: self; body; one's own.

ní; ne₄: fear; respect; frightfulness; awe.

nu: n., image, likeness, picture, figurine, statue.

adj. & adv., no, not; without; negative.

nu₁₁[ŠIR]: light; fire, lamp; alabaster.

(^{iš})pa: leaf, bud, sprout; branch; wing; feather.

pa_{4,5,6}(-r): irrigation ditch, small canal, dike.

pú: well, cistern, pool, fountain; depth.

ra(-g/h): n., inundation.

v., to strike, stab, slay; to stir; to impress, stamp, or roll (a seal into clay); to branch out (from the side of a canal); to flood, overflow; to measure; to pack, haul, or throw away (with -ta-).

re₇; ri₆, rá, ir₁₀; e-re₇

v., to roast (barley).

sá: n., advice.

v., to approach or equal in value; to compare with; to compete (with -da-).

sa₄: to name; to call by name.

sa₅: n., red ocher.

adj., red, red-brown.

sa₇: well-formed.

sa₉: half.

sa₁₀: to be equivalent; to buy (Akkadian loan ?).

si: n., horn(s); antenna(e); line; ray(s); light; plowland.

v., to stand upright; to be straight; to be in order; to become completely still.

adj., regular, normal.

si; su; sa; sa₅: v., to fill up; to fill with (with -da-); to survey a field; to inundate; to be full; to be sufficient, enough; to increase; to compensate, repay, replace; to grow weak (probably reduplication class).

adj., suitable, fit.

si₄, su₄, sa₁₁: red.

si₁₄: a small pot.

su: n., body; flesh; skin; animal hide; relatives; substitute.

adj., naked.

su₄: to grow; to multiply.

su₉; ša₄: n., red ocher.

v., to mourn, grieve.

su_x: to spread.

ša: to dry up.

ša₅: to cut, break (reeds).

še: n., barley; grain; a small length measure, barleycorn.

šè: n., portion.

še₁₀: excrement, dung.

šu: n., hand; share, portion, bundle; strength; control.

v., to pour.

šu₄(-g): to stand; to be deployed, set up (plural, reduplication class).

ta, dá: n., nature, character.

te, de₄: n., cheek, chin.

te, de₄; ti: v., to approach, meet (someone: dative); to attack, assault; to be frightened (alternating class, *hamtu* stem).

tè: an alkaline plant (?); soapwort (?); cardamon.

te₈[Á]^{mušen}: bearded vulture.

ti: side, rib; arrow.

tu: to interfere.

tu_{5,17}: n., bath.

v., to wash, bathe; to pour; to make libation (probably reduplication class).

tu₆: exorcism; conjuration; exorcistic formula.

tu₇: soup; soup pitcher.

za: you (singular).

za: to make noise (occurs as the verb in compounds with repetitive, onomatopoeic syllables symbolizing a repeated monotonous noise or motion).

za₍₂₎: precious stone, gemstone; bead; hailstone; pit; kernel.

zé[ZÍ]: to cut; to shear, cut hair; to pluck.

zi: n., breathing; breath (of life); throat; soul.

zí: stench; bile; bitter.

zu, sú: n., wisdom, knowledge.

v., to know; to understand; to inform, teach (in *marû* reduplicated form); to learn from someone (with -da-); to recognize someone (with -da-); to be experienced, qualified.

zú, su₁₁[KA]: tooth, teeth; prong; thorn; blade; ivory; flint, chert; obsidian; natural glass.

Written Sumerian contains many examples of homonymy, differently written signs that at least in the Akkadian transcription appear to have been pronounced the same, such as ka, 'mouth' and ká, 'gate'. Also, individual signs show many instances of polysemy, using the same sign or word to mean many things, such as 'star', 'flower', 'remote', 'ancient' and 'joy' for the ul sign. This raises the question, "What is a word?" Before the invention of writing, when language was only spoken, a word was something other than a dictionary entry. More primary than words are objects and actions. Early humans faced the task of agreeing on vowel-consonant combinations that would point at all the real objects that existed in their world. The speech sounds upon which they agreed were of a more limited number than the objects at which they had to point. Early humans used words as deictic pointers. Context made it clear at what object or action they were pointing. Prior to speech invention, humans had to be expert at deducing from context the significance of another human's actions, expressions, or gestures. Polysemy could run rampant in early language because listeners would understand from the context at what speakers were using their words to point. By inventing multiple homonymous written signs to represent the more diverse concepts shared by particular consonant-vowel combinations, the Sumerian scribes sought to order, organize, and separate into separate word-signs some of the less related deictic objects of polysemic speech words.

Languages are like filing systems. They have to have storage spaces for all the 'stuff' that the language speakers have to talk about. Depending on the initial design decisions that went into each language filing system's structure and size, the available storage spaces can be abundant or few and overloaded. The result can be a language house that is either semantically clean and organized or semantically messy and cluttered.

The entire lexicon of 1,255 Sumerian logogram words and 2,511 Sumerian compound words can be found on the Internet at <http://www.sumerian.org/sumerlex.htm>.

The more complex word structures in Sumerian are:

CVCV (e.g., gaba, 'breast' = ga, 'milk' + ba, 'to give');

VCVC (e.g., ušub, 'basket' = uš, 'to support, lift' + ub₄, 'cavity, hole');

VCCV (e.g., úrgu, 'ferocity' = ur, 'dog' + gù, 'to bark');

VCCVC (e.g., endub, 'cook' = en, 'lord, manager' + dub, 'to pour, heap, move in a circle, shake');

VCVCV (e.g., urudu, 'copper' = ùru, 'luminous object' + dù, 'to mould, cast');

CVCVC (e.g., 𒀭adub, 'tablet container' = 𒀭ar; 𒀭á, 'storeroom; to store' + dub, 'tablet');

CVCCV (e.g., 𒀭éšbu, 'grappling hook for a wrestler' = 𒀭iš, 'wood; tool' + bu, 'to pull, draw');

VCVCVC (e.g., urugal, 'the netherworld' = uru, 'city' + gal, 'big');

VCCVCV (e.g., eškiri, 'nose rope, halter, bridle' = éše, 'rope' + kîri, 'muzzle');

VCCVCVC (e.g., umbisa 𒄩, 'scribe' = umbin, 'nail or nail impression (on a clay tablet)' + sa 𒄩, 'head; human');

VCCVCCV (e.g., immindu, 'roasting, baking oven' = im, 'clay' + ninda, 'bread');

VCVCCVC (e.g., elamkuš, 'bladder' = élla 𒄩, 'kidneys' + kuš, 'skin');

CVCCVC (e.g., kankal, 'waste land, uncultivated land' = ki, 'place, ground' + 𒄩ál 'to be available');

CVCVCV (e.g., tabira, 'metalworker' = tab, 'to hold, clasp' + ùru, 'luminous object');

CVCVCVC (e.g., buranun, 'Euphrates river' = bu₅, 'to rush around' + ra, 'to flood, overflow' + nun, 'noble, great');

CVCVCCV (e.g., kurušda, 'sweet; plump, fat; honey; sweet fodder (for fattening cattle)' = kurun, 'sweet grape' + šita₄, èšda, 'to bind');

CVCVCCVC (e.g., muhaldim, 'baker, cook' = mù, 'to mill, grind' + hal, 'to apportion' + dím, 'to fashion');

CVCCVCV (e.g., mangaga, 'palm fiber, bast' = man, 'equal, partner' + gag, 'nail, peg' + a(k), 'of');

CVCCVCVC (e.g., dalhamun, 'tornado; violent storm' = dal, 'to fly' + ha-mun, 'mutually opposing or contrasting'); and

CVCCVCVCV (e.g., kingusili, 'greater part' = kí 𒄩, 'task', + silig, 'hand [of five fingers]').

In our transcription, the proto-Sumerians distinguished between the four vowel sounds known to the Semitic Akkadians, from whom we derive our knowledge of Sumerian. It is possible that in some cases our vowel /u/ should be transcribed as /o/¹, making at least five vowels. Quickly exhausting the symbolic possibilities of the vowels, the proto-Sumerians constructed symbolic analogies between what we call consonants, which involved impeding one's vocal production in various ways, and certain external objects and actions. The Sumerians employed the labial, dental-alveolar, and velar stops, nasals, fricatives, and approximates indicated in the lexicon, with the important difference from us that they did not distinguish between voiced and voiceless stops like /b/ and /p/, /d/ and /t/, or /g/ and /k/. Our varying use of one or the other transcription represents a pronunciation distinction which has not yet been adequately clarified.²

The structurally-organized lexicon makes it easy to see that words having the same consonant are often related in meaning. Certain sets of abstract ideas are associated with each consonant. Insofar as they can be synthesized from the concrete words found in the lexicon, following are the abstract ideas associated with each consonantal phoneme.

/b:p/ = cavity, receptacle, container; to take, choose, allocate; choice.

/d:t/ = edge; side; to approach; to leave; to interact with; to act, do, perform.

/g:k/ = throat; circle; entrance; base; long, narrow; to consume; to kill; to utter.

/m/ = female; to cause to be; to be; to make go out; to go; transportation; to speak.

/n/ = discrete individuality; to be high; to be awesome.

/ŋ/ = self; kin; to love, benefit.

/l/ = happiness; abundance; food production; males.

/r/ = to protect, shelter, support; to send forth, emit, secrete.

/s/ = skill; to be near; to enclose, bind; to be full.

/š/ = quantity, portion; grain; moistness; to support, suspend.

/h/ = numerousness; saliva.

/z/ = to cook, roast; meat (animal); teeth; to cut; breathing.

Having identified the sets of ideas associated with each proto-Sumerian consonant, the question arises as to why these particular associations and not others. The answer is foreign to the modern mind, accustomed as we are to words which are constructed of arbitrary consonants and vowels, words which we commit to memory as unbreakable morphemic sequences. In modern languages, except for a few words which are recognized to originate in sound symbolism, meaning is divorced from sound. The sounds that make up modern words do not have meanings which everyone acknowledges. This was not the case for the inventors of the proto-Sumerian language because they were trying to use the mouth and the sounds that it produced to 'point' at objects and actions. One can think of these sounds as 'mouth-gestures' or 'mouth-pictures'. What one did with the mouth to produce the consonantal sounds had to have enough logical similarity to the referenced actions or objects to trigger a mental association. Thinking is based on stringing together parts which economically represent wholes. The mind can recall a whole object or action when presented with just a part of it. Proto-Sumerian mouth-gestures tried to recreate enough features of part of an object or action to enable recalling the whole.

The proto-Sumerians recognized the following articulatory symbolism:

/b:p/: The lips required to produce a bilabial stop were taken to represent the mouth as a whole, that is, as a 'cavity' or 'receptacle'; while as prehensile organs, which furthermore demarcate the entrance to each person, their sound came to represent 'taking' or 'allocating'.

/d:t/: A dental-alveolar stop is produced with the tip of the tongue closed against the upper incisors and/or the alveolar ridge and with the sides of the tongue pressed against the upper molars. The closure of the oral cavity on all sides led to the meaning 'edge, side', which led to associated verbal meanings

such as interaction between two parties or between one party and an 'edge' or 'boundary'. Since chewing with the molars is the mouth's primary activity, this phoneme also meant 'to act, do, perform'.

/g:k/: A velar stop is produced with the back of the tongue closed against the velum or palate. Of the stops it is the farthest back, so its meanings derive mainly from association with the throat. Such meanings include 'entrance', 'long, narrow', 'to consume', 'to kill', and 'to utter'. The production of this phoneme at the base of the oral cavity is what led to the meaning 'site, base'.

/m/: This is a bilabial nasal resonant, in which the oral cavity closed by the lips provides a resonating chamber for the voice which is directed out through the nasal cavity. The idea of a chamber may have led to the idea of a 'woman' in her child-bearing capacity and thence to the meanings 'to cause to be' and 'to go out'. It should be noted that *ama* means 'mother' in many other languages besides Sumerian and thus presumably derives from baby talk. But because its baby talk counterpart meaning 'father', *ada*, shows no signs of having influenced the meaning of /d:t/, we should retain the vocal mechanics explanation for /m/.

/n/: The resonating cavity of this alveolar nasal resonant is foreshortened by the tip of the tongue touching the alveolar ridge. The light touch of the tip of the tongue inspired the idea of 'discrete individuality', while its position at the roof of the mouth led to the meaning 'to be high'.

/ŋ/: This sound is called a velar nasal resonant. With the tongue held closed as for /g:k/, the voice is allowed to escape through the nasal cavity, producing a sound like *ng* in *rang*. The sound resonates mainly in the throat, sinus, and nasal cavity. As the most internal of the resonants, the sound came to mean 'self'.

/l/: A lateral oral resonant is produced like a vowel except that the tip of the tongue contacts the alveolar ridge, which laterally displaces the air flow. The effortlessness of producing this consonant caused it to be associated with 'happiness', 'abundance', and with those tireless producers of abundance, 'males'.

/r/: This oral resonant is also produced like a vowel except that by raising the tongue to the palate a narrow passageway is created to control emission of the sound. The controlling action and the position of the tongue relative to the palate led to the meanings 'to send forth, emit' and 'to protect, shelter, support'.

/s/: A dental-alveolar voiceless fricative is generated by closing the oral cavity with the tongue while directing air past the grooved tip of the tongue held against the alveolar ridge proximate to the teeth with resulting audible friction. The difficulty of this operation led to the meaning 'skill'. The tongue's proximity to the teeth led to the meaning 'to be near', while the closure of the oral cavity generated the meanings 'to enclose, bind' and 'to be full'.

/š/: A palatal voiceless fricative, like the *sh* in *shell*, is produced by raising the blade of the tongue to the alveolar ridge and palate to create a low but broad opening, direction of air through which results in audible friction. As with the phoneme /r/, the position of the tongue raised to the palate led to the

meaning 'to support', which in turn led to 'rope'. The 'moistness' association of this consonant derives from its gushing sound. The meanings 'quantity, portion' and 'grain' are best explained in connection with the next consonantal phoneme, /h/.

/h/: This is a velar voiceless fricative, pronounced like the *ch* in German *Buch* or Scottish *loch*. The back of the tongue is held close to the velum so that when air is forced past the constriction the result is a series of small explosions. The repetitive explosiveness is what led to the meaning 'numerousness'. This contrasts with the 'quantity' of /š/ in the same way that 'many' contrasts with 'much' - the distinct explosions of /h/ correspond to 'many' and the sustained, smooth friction of /š/ corresponds to 'much'. This consonant refers to saliva or phlegm because of its similarity to the sound of hawking phlegm.

/z/: The tongue position for this dental-alveolar voiced fricative is the same as for the voiceless fricative /s/. The position of the tongue against the teeth caused it to mean 'tooth, teeth' and 'to cut'. The resemblance to a sizzling sound led to the associations 'to cook, roast' and 'meat (animal)'. The phoneme may mean 'breathing' because, as recognized by cartoonists, it resembles the sound of snoring.

Do the Sumerian vowel words display articulatory symbolism? Thirty years ago Johannesson wrote that, "The first human needs are food and drink and the appeasement of sex; primitive speech must be closely related to these needs."³ This is what we find in the proto-Sumerian vowel word vocabulary. /u/ is 'plant, food', /a/ is 'water, drink', and it appears that /o/ refers to 'sleep' or 'intercourse'. The small round vowel /u/ points at objects like plant stems. The vowel /a/ is how the mouth is held when drinking. The big round vowel /o/ could symbolize either the male or the female sexual organs. The small high-pitched vowel /i/ symbolizes small things so it means 'to sprout'. The wide, square vowel /e/ pointed at rectangular things like 'house'.

In a search of the literature, I was surprised to find that another scholar has already discovered a similar system of meaningful phonemes (she calls them *phememes*) in the proto-language that led to Indo-European and some other language families.⁴ This scholar arrived at her insight by doing comparative work across language families. She noticed that the same consonants kept having certain kinds of meanings. The meanings that she synthesized for the Eurasian proto-language are spatial and abstract in nature, as compared to the analogic and concrete meanings that I have deduced for the proto-Sumerian phememes. This might reflect a sex-related difference in thinking style between the inventors of the two proto-languages, with the inventors of the proto-Eurasian language favoring the spatial right-brain and the inventors of the proto-Sumerian language favoring the sequential left-brain. Another suggestion is that the primarily verbal monosyllabic roots of Indo-European were developed under the influence of an already existing mimetic or gesture language.⁵

While linguists who are only familiar with Eurasian languages may argue for monogenesis of all world languages, the proto-Sumerian lexicon demonstrates that multiple invention or polygenesis of spoken language is what actually occurred. The words of proto-Sumerian are fundamentally different from those of proto-Indo-European. However, because the proto-Sumerians appear to be unique in having started with vowel-only words, they have a good claim not just to having invented a complete spoken

symbol system, but to having originated the concept of such a system. Non-speaking populations could have invented their own systems once they had been exposed to the concept of speech (this is not to deny that multiple populations could have invented the concept of speech independently, cf., the use of clicks in Africa). A good parallel example is how the Sumerian invention of the concept of writing appears to have inspired the creation of very different forms of writing in Pre-Dynastic Egypt and the Indus civilization of Pakistan and India. What was transmitted was not the exact pictographs of the early Sumerian writing system, but their concept of writing.

The process of spreading the concept of speech from speaking populations to non-speaking populations probably involved incomplete degrees to which existing speech elements were transmitted or borrowed, with the remainder having to be invented autonomously. For this reason, the biological model of a family tree is an inappropriate model for examining early language relatedness. Languages which share important elements are not necessarily descended from an even more remote common ancestor. Biological forms must be descended from ancestral forms. This cannot be true for languages for an infinite time depth. The method of glottochronology must break down when it reaches the event horizon at which a population went from nonspeaking to speaking. In some cases, just the concept of speech will have inspired a population to invent their own language. In other cases, a population will have built their new language upon a repertoire of elements taken from an existing language.

There are clues within the lexicon telling us when the proto-Sumerian event horizon occurred. The n+vowel words suggest that the system of clay tokens for counting and recording which prevailed throughout the Near East from 8,000 B.C. to 3,000 B.C.⁶ was already in use. The word for 'clay', imi, is related to the word for 'tongue; speech', eme. The word ùr meaning both roof and entrance, as well as the word ub meaning corner, suggests that they lived in the close-packed, rectangular houses entered through holes in the roof found in Western Iran at sites like Ganj Dareh as well as in Anatolia at sites like Çatal Hüyük. Proto-Sumerian includes words for domesticated animals such as dog (ur), goat (ùz), cow (áb), and sheep (us₅). Simple agriculture is indicated by the words for grain (še), irrigation ditch (ég), and digging stick (al). The indications are that the proto-Sumerians invented their language at the start of the Near Eastern Neolithic, approximately ten thousand years ago.

Notes

1. S.J. Lieberman, "The Phoneme /o/ in Sumerian," in *Studies in Honor of Tom B. Jones*, ed. M.A. Powell Jr. and R.H. Sack (AOAT 203 [1979]), pp. 21-28. A count of vowel occurrences in the lexicon from V to CVC words indicates 274 vowels transcribed as Akkadian /a/, 352 vowels as Akkadian /u/, 213 vowels as Akkadian /i/, and 104 as Akkadian /e/.
2. J. Krecher, "Verschlusslaute und Betonung im Sumerischen," in *lišan mithurti*, ed. W. Röllig (AOAT 1 [1969]), p. 163; T. Jacobsen, *Toward the Image of Tammuz and Other Essays on Mesopotamian History and Culture* (Cambridge, Mass., 1970), p. 367; J.A. Black, "The Alleged Extra Phonemes of Sumerian," *Revue d'Assyriologie*, 84(1990), pp. 107-18.
3. A. Jóhannesson, *The Third Stage in the Creation of Human Language*, (Reykjavík and Oxford, 1963), p. 27.

4. M.L. Foster, "The Symbolic Structure of Primordial Language," in *Human Evolution: Biosocial Perspectives*, ed. S.L. Washburn and E.R. McCown (*Perspectives on Human Evolution*, vol. IV, Menlo Park, 1978), pp. 77-121.
5. G. Fano, *The Origins and Nature of Language*, trans. by S. Petrilli, (Bloomington & Indianapolis, 1992), p. 109.
6. D. Schmandt-Besserat, *Before Writing* (Austin, Texas, 1992).

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