SYSTEMS OF TERMINOLOGICAL MODERNIZATION OF LUGANDA

TERMINOLOGICAL SYSTEMS IN LUGANDA

Chemical nomenclature is regulated by the International Union of Pure and Applied Chemistry (IUPAC). Economy, generativity, internationality and systematicity are essential features of chemical nomenclature.

Compliance with internationality and systematicity has to be reconciled with language-specific acceptability. Consider, for instance, (22) which exhibits differences in graphemic, morphemic and syntactical rendition.

(22a) Ger. *Kalziumchlorid,* F. *chlorure de calcium,* E. *calcium chloride*

(22b) Ger. *Sulphat, Sulphate;* E. *sulfate, sulfates*

Chemical elements are set out in (23).

(23)

Ac	actinium	aktinio
Al	aluminium	aluminio
Am	americium	amerisio
Sb	antimony	antimonio
Ar	argon	argoni
As	arsenic	arseno
At	astatine	astato
Ba	barium	bario
Bk	berkelium	berikelio
Be	beryllium	beryulio
Bi	bismuth	bismuthi
B	boron	boroni
Br	bromine	bromu
Cd	cadmium	kadimio
Ca	calcium	kalsio
Cf	californium	kalifornio
C	carbon	karboni
Ce	cerium	serio
Cs	cesium	sezio
Cl	chlorine	klori
Cr	chromium	kromu
Co	cobalt	kobalti
Cb	columbium	kolumbio
Cu	copper	kupro
Cm	curium	kurio
Dy	dysprosium	dyusprozio
Es	einsteinium	einsteinio
Er	erbium	erbio
Eu	europium	europio
Fm	fermium	fermio

F	fluorine	fluori
Fr	francium	fransio
Gd	gadolinium	gadolinio
Ga	gallium	galio
Ge	germanium	germanio
Au	gold	zzaabu
Hf	hafnium	hafnio
He	helium	helio
Ho	holmium	holmio
H	hydrogen	hyudrogenio
In	indium	indio
I	iodine	iodi
Ir	iridium	iridio
Fe	iron	fero
Kr	krypton	kryuptoni
La	lanthanum	lanthano
Lr	lawrencium	laurensio
Pb	lead	essasi
Li	lithium	lithio
Lu	lutetium	lutetio
Mg	magnesium	magnesio
Mn	manganese	mangani
Md	mendelevium	mendelevio
Hg	mercury	zzebaki
Mo	molybdenum	molyubdeno
Nd	neodymium	neodyumio
Ne	neon	neoni
Np	neptunium	neptunio
Ni	nickel	nikelo
Nb	niobium	niobio
N	nitrogen	nitrogenio
No	nobelium	nobelio
Os	osmium	osmio
O	oxygen	oksigenio
Pd	palladium	paladio
P	phosphorus	fosfori
Pt	platinum	platino
Pu	plutonium	plutonio
Po	polonium	polonio
K	potassium	potasio
Pr	praseodymium	praseodyumio
Pm	promethium	promethio
Pa	protactinium	protaktinio
Ra	radium	radio
Rn	radon	radoni
Re	rhenium	renio

Rh	rhodium	rodio
Rb	rubidium	rubidio
Ru	ruthenium	ruthenio
Sm	samarium	samario
Sc	scandium	skandio
Se	selenium	selenio
Si	silicon	silikoni
Ag	silver	effeeza
Na	sodium	sodio
Sr	strontium	stronsio
S	sulfur	sulfa
Ta	tantalum	tantalo
Tc	technetium	teknesio
Te	tellurium	telurio
Tb	terbium	terbio
TI	thallium	thalio
Th	thorium	thorio
Tm	thulium	thulio
Sn	tin	stano
Ti	titanium	titanio
W	tungsten, wofram	wolframu
U	uranium	uranio
V	vanadium	vanadio
Xe	xenon	ksenoni
Yb	ytterbium	uterbio
Zn	zinc	zinka
Zr	zirconium	zirkonio

I propose that IUPAC chemical suffixes be shared in lugandised form as shown in (24)

(24a)	*-ane*		*-aano*
	methane	CH_4	methaano
	ethane	C_2H_6	ethaano
	propane	C_3H_8	propaano
	butane	C_4H_{10}	butaano
	pentane	C_5H_{12}	pentaano
	hexane	C_6H_{14}	heksaano
	heptane	C_7H_{16}	heptaano
	octane	C_8H_{18}	oktaano
	nonane	C_9H_{20}	nonaano
	decane	$C_{10}H_{22}$	dekaano

(24b)	*-ene*	*-eeno*
	methene	metheeno
	nonene	noneeno

(24c)	*-yne*	*-yuuno*
	ethyne	ethyuuno
	propyne	propyuuno

(24d)	*-ate*	*-(w)aato*
	chlorate	kloraato
	carbonate	karbonaato
	nitrate	nitraato
	bromate	bromaato
	sulphate	sulfaato
	chromate	kromaato
	zincate	zinkaato
	aluminate	aluminaato
(24e)	*-ase*	*-aaso*
	sucrase	sukraaso
	lactase	laktaaso
(24f)	*-ose*	*-ooso*
	sucrose	sukrooso
	lactose	laktooso
	glucose	glukooso
	hexose	heksooso
	pentose	pentooso
	frustose	fruktooso
	aldose	aldooso
(24g)	*-al*	*-alo*
	methanal	methanalo
	ethanal	ethanalo
	propanal	propanalo
(24h)	*-ol*	*-olo*
	methanol	methanolo
	ethanol	ethanolo
	propanol	propanolo
(24i)	*-yl*	*-yulo*
	methyl	methyulo
	ethyl	ethyulo
	propyl	propyulo
(24j)	*-ile*	*-iilo*
	nitrile	nitriilo
(24k)	*-ide*	*-iido*
	bromide	bromiido
	iodine	iodiido
	oxide	oksiido
	dioxide	dioksiido
	monoxide	monoksiido
	tetroxide	tetroksiido
	chloride	kloriido
	pentachloride	pentakloriido
	peroxide	peroksiido
	sulphide	sulfiido
(24l)	*-ic*	*-nna-*

nitric -nnanitro
chloric -nnakloro
ethanoic -nnethaano
butanoic -nnabutaano

(24m) *ammine* *yamiino*
hydrocarbon hyudrokarboni
alkane $C_n H_{2n+2}$ alkaano
alkene $C_n H_{2n}$ alkeeno
alkyne $C_n H_{2n-2}$ alkyuuno
alcohol $C_n H_{2n+1}OH$ alkoholo
aldehyde $C_n H_{2n+1}CHO$ aldehyuudo
ketone $ROOR_1$ ketoono
carboxylic acid COOH asidi omunnakarboksyulo
ether ROR_1 ethero
alkyl halide $C_n H_n + _1 H$ haliido alkyulo
haloform CHX_3 ekihalo
nitrile nitriilo
amine amiino
amide amiido
amino acid asidi omwamiino
ester estero
fat amasavu
oil amafuta
alkyl alkyulo
carbohydrate karbohyudraato
sugar ssukaali
polysaccharide polyusakariido

It will be recalled that the conceptual calculus is meant to promote conceptual focussing prior to expression formation. Let me take the formalisation of chemical reaction types as an example of conceptual clarification. Consider the conceptual unions in (25).

(25a) $[M_1 \text{ j } M_2] \text{ v } [M_3 \text{ j } M_4]$
(25b) o c [M v $[M_1$ j $M_2]]$, where o ß A, W, B
(25c) $[M_1 \text{ j } M_2] \text{ v } M$
(25d) $[M_1 \text{ j } M_2] \text{ v } [[M \text{ j } W] \text{ d}[M \text{ j}^- W]]$

With (25) we capture virtually all chemical reaction types. Chemical reactions are categorisable according to the active chemical agent (25a), the physical agent (25b), the product (25c) or thermodynamic considerations (25d). We note in the margin that materialisation according to Einstein's law relating energy to mass

(26) B v M

is a case of (25c). Concepts such as halogenation, hydrolysis, hydrogenation and ozonolysis (25a), pyrolysis, electrolysis, photolysis, fumigation (25b), polymerisation, alkylation (25c) become readily amenable to expressional articulation in Luganda. For instance, if the chemical reaction in (27).

(27) $C_2H_6 + Cl_2 \rightarrow C_2H_5Cl + HCl$

is identified as a case of (25a), then by interpreting M_2 as chlorine, we could easily arrive at an appropriate Luganda expression in (28).

(28) *obu + klori +wal + I* → *obukloriwazi*
"chlorination"

Turning to biological nomenclature, we observe that it is systematic and, according to international convention, in neo-Latin. Thus, a Luganda-speaking biologist would have to use *Canis familiaris* instead of *embwa* 'dog', *Musca domestica* instead of *ensowera* 'housefly', *Homo sapiens* instead of *omuntu* 'human' and so on whenever systematic names are compelling. Similarly, he would use such taxonomic expressions like *Canidae, Annelida, Cephalopoda, Rhodophyseae, Eugelenophyta, Psilophtales* and *Mammalia* whenever he refers to systematic groups (taxa).

Biological nomenclature is regulated by two codes:

The International Code of Zoological Nomenclature (ICZN) developed by International
Zoological Congresses;
and
The International Code of Botanical Nomenclature (ICBN) developed and adopted by
International Botanical Congresses.

For teaching purposes, especially at pre-university levels of education, the nomenclature can be articulated in Luganda in order to attain transparency. This is the task I accomplish below. The Kiganda clan system exhibits the following hierarchy:

Ssaabataka	"head of clan heads"
Akasolya	"clan head"
Ekika	"clan"
Essiga	"clan division"
Omutuba	"clan sub-division"
Olunyiriri	"lineage"
Enda	"womb, family"

Let the Kiganda clan system correspond to the nomenclatural systems so that

Kingdom	*Obwassaabataka,* $1^0/2^0$
Phylum	*Akasolya,* 12/14
Class	*Ekika,* 7/8
Order	*Essiga,* 5/6
Family	*Omutuba,* 3/4
Genus	*Olunyiriri,* 11/10
Species	*Enda,* 9/10

Synthesising the Kiganda clan nomenclature and the gradation for size (quantity), all the biological nomenclature can be rendered into Luganda. *Without* loss of

conceptual precision, I am replacing *Obwassaabataka* with *Obwakabaka* 'Kingdom' because the King (Kabaka) is the *Ssaabataka.*

The Categories of Taxonomic Hierarchy (Zoological Code).

neo-Latin	Luganda	
REGNUM	OBWAKABAKA	OBWA-
Subregnum	Walubwakabaka	Walubwa-
Infraregnum	Nnalubwakabaka	Nnalubwa-
Superphylum	Wassolya	Wakka-
PHYLUM	AKASOLYA	AKA-
Subphylum	Walusolya	Waluka-
Superclassis	Wakka	Wakkya-
CLASSIS	EKIKA	EKYA-
Subclassis	Waluka	Walukya-
Infraclassis	Nnaluka	Nnalukya-
Supercohortus	Sseruka	Sserukya-
Cohortus	Kaluka	Kalukya-
Subcohortus	Wakaka	Wakakya-
Infracohortus	Nnakaka	Nnakakya-
Superordo	Wassiga	Waddya-
ORDO	ESSIGA	ERYA-
Subordo	Walusiga	Walulya-
Infraordo	Nnalusiga	Nnalulya-
Superfamilia (-oidea)	Wattuba	Waggwa-
FAMILIA (-idea)	OMUTUBA	OGWA-
Subfamilia (-inae)	Walutuba	Walugwa-
Infrafamilia	Nnalutuba	Nnalugwa-
Supertribus	Sserutuba	Sserugwa-
Tribus (-ini)	Kalutuba	Kalugwa-
Subtribus (-ae, -i)	Wakatuba	Wakagwa-
Infratribus	Nnakatuba	Nnakagwa-
Supergenus	Walinyiriri	
GENUS	OLUNYIRIRI	
Subgenus	Walunyiriri	
Infragenus	Nnalunyiriri	
Superspecies	Walinda	
SPECIES	ENDA	
Subspecies	Walunda	

The Categories of Taxonomic Hierarchy (Botanical Code)

neo-Latin	Luganda	
REGNUM	OBWAKABAKA	OBWA-

Subregnum (-bionta)	Walubwakababaka	Walubwa-
DIVISIO (-phyta/-mycota)	KASOLYA	AKA-
Subdivisio (-phytina/-mycotina/-icae)	Walusolya	Waluka-
CLASSIS (-phyceae -mycetes/ opsida, -ideae)	EKIKA	EKYA-
Subclassis (-phycidae/ -Mycetidae, -idae, -ideae	Waluka	Walukya
Superordo (-anae)	Wassiga	Waddya-
ORDO (-ales)	ESSIGA	ERYA-
Subordo (-ineae)	Walusiga	Walulya-
FAMILIA (-aceae)	OMUTUBA	OGWA-
Subfamilia (-oideae)	Walutuba	Walugwa-
Tribus (-eae)	Kalutuba	Kalugwa-
Subtribus (-inae)	Wakatuba	Wakagwa-
GENUS	OLUNYIRIRI	
Subgenus	Walunyiriri	
Sectio	Nnalunyiriri	
Subsectio	Sserunyiriri	
Series	Kalunyiriri	
Subseries	Wakanyiriri	
SPECIES	ENDA	
Subspecies	Walunda	
Varietas	Nnalunda	
Subvarietas	Sserunda	
Forma	Kalunda	
Subforma	Wakanda	

In order to formulate the rule of expression formation in biological nomenclature, consider the class of Mammals i.e.

Classis Mammalia

(29) *Ekika ekya Eziyonka*
'class of those which suck'
Ekika Ekyeziyonka
'Classis Mammalia'

Further, consider the Infraclassis *Eutheria*

(30) *Nnaluka* *Nnalu + kya + ssenjizzi*
"true hunters"

Nnalu- is the gradational prefix. The principal taxonomic category is marked by *ki* so that *ki + a → kya*

The rule therefore, is:

(31) PN + PPrn + a + N

In this case, we have

(32) PN *(nnalu)* + PPrn *(ki)* + a + N *(ssenjizzi)*

I now dispose of the point mooted earlier namely, the rendition of the Geological Time Scale into Luganda. Geologically speaking, time is graded according to Table 4.

Although the prefixes *holo-, pleisto-, plio-, mio-, oligo-, eo-,* and *paleo-* are not systematic , the geological epochs could be named systematically in Luganda . With *-cene* as *jjuuzi* "recent time" and applying the prefixes for the gradation of length of time , I arrive at (33).

(33) *Kakajjuuzi* "Holocene"
Ssekajjuuzi "Pleistocene"
Nnakajjuuzi "Pliocene"
Wakajjuuzi "Miocene"
Kalujjuuzi "Oligocene"
Sserujjuzi "Ecocene"
Nnalujjuuzi "Paleocene"

Even eras lend themselves to systematic rendition into Luganda as (34) indicates.

(34a) *Obukulu* "Era"
(34b) *Obwensolo Bunnajjuuzi* "Cenozoic"
Obwensolo Bunnawakati "Mesozoic"
Nnalubwensolo "Paleozoic"
Obwensolo Bunnakazadde "Proterozoic
Obwensolo Bunnabyadda "Archeozoic"

It should be noted that I have resorted to Table 3 to deal with the prefixes *meso-, protero-* and *archeo-*.

Coining medical terminology in Luganda is not an insurmountable problem; it is a matter of systematically extending the already existing terminology of medical Luganda. A medical Luganda terminologist could easily resort to the extensive glossary of Greco-Latin combining forms in Appendix B and apply those methods of terminological elaboration of Luganda I have argued for so as to coin the myriads of requisite terms. However, in (35) I present affixes with high currency together with the basis of expression formation for their rendition into Luganda.

(35)

-aemia	omusaayi 3/4
-aesthesia	-ewulir-
-agogue	-viis-
-algia	-lum-, obulumi 14
-asthenia	-nafuw-, -nafu
-biosis	-lamir-, obulamu 14
-blast	-omutunsi 3/4
-cele	-zimb-, ekizimba 7/8
-cephaly	omutwe 3/4
-clasis	-zikiririr-
-clysis	-yingir-
-coccus	-sig-, ensigo 9/10

-cyst ensunduba 9/10
-cyte akasenge 12/14
-derm olususu 11/10, eddiba 5/6
-desis -nywer-
-dynia -lum-, obulumi 14
-ectasia -gaziw-, -gazi
-ectomy -sal-
-facient -kol-
-form -wavu
-gen, -genic, -genesis -tond-,-kol-
-genous -leet-
-gram -lag-
-graph, -graphy -lojj-
-(i) -asis -lwal-, kalwala-
-iatrics -jjanjab-
-icide -tt-
-id -wavu
-iparous -zaal-
-ism ka-12^{0}, bu-14
-itis kaakiriza-
-ivorous -ly-
-kinesis -ejjulul-
-lysis -megulul-, -wul
-malacia -gond-
-mania -laluk-
-megaly -gaziw-, -gazi
-morphous -wavu
-oid -wavu
-oma -zimb-, ekizimba 7/8
-opia, -opsy -lab-
-osis -lwal-, kalwala-
-ostomy -ggul-
-otomy -sal-
-pathy -lwal-, -ewulir-
-penia -bul-, ebbula 5
-petal -noony-
-pexy -wang-
-phage, -phagia,
-phagous, -phagy -ly-
-phasia -yoger-
-phily, -philous,
-phile -ettanir-
-phobia, -phobe -kyaw-
-phore, -phoresis -etikk-, -kongojj-
-phylaxis -ziyir-
-plasia, -plasty -tond-, -kol-

-poiesis	-kol-, tond-
-ptosis	-suul-
-rhagia	-yabik-, -kulukut-
-rhaphy	-tung-
-rhoea	-kulukut-
-rhexis	-yabik-
-schist(o)	-yatik-
-stasis, -stasy	-yimirir-, -laal-
-taxis, -taxy	-tegek-
-tom, -tome, -tomy	-sal-
-trophy	-liis-, emmere 9
-tropism, -tropic	-kyukiririr-
-ura	enkali 9