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Onomatopoeia and Phono-Iconicity in Hebrew in the framework of LUIT : Language – a Unified and Integrative Theory

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The domain of onomatopoeia is much vaster than it seems to have been believed
(Maurice Grammont 1901: 319)

Onomatopoeia and Phono-Iconicity (OP & PI) are the phenomena by which (a) a linguistic element is phonetically inspired by the sound of the reality it conveys, and by which (b) a linguistic sound is iconically related to its meaning. Both refer to the sound as (1) perceived by the speakers and (2) reproduced according to the constraints of the language's phonology. Like intonation-prosody, deixis and iconicity, OP & PI too are found in all languages, including in their grammar, at all their developmental steps, diachronic stages, synchronic uses and stylistic registers. OP & PI are among the key elements which point to the evolutionary origin and biological nature of language (Darwin 1872, Maturana 1978, Lieberman 1991, Kirtchuk 1993 sqq.) out of pre-linguistic communication founded on prosodic and intonative devices based to a large extent on the imitation of natural sounds and on gestural-cum-vocal deixis. OP & PI also show the importance of emotional factors in the way language functions (Fónagy 2000). OP & PI are the most straightforward evidence to the correlation in language between content and form (Bolinger 1949 sqq.). Thus, OP & PI play an important role in LUIT (Kirtchuk 2007). Hebrew displays OP & PI from its oldest layers to our day (Weinstock 1983). They affect its lexicon and grammar deeply, widely and consistently. The bi-phonematicity of the Hebrew (Semitic and Afro-Asiatic) is greatly corroborated by OP & PI.

1. Prologue

Onomatopoeia (henceforth OP) is the well-known cross-linguistic phenomenon by which a linguistic element is phonetically inspired on the sound of the reality it conveys. Thus, in English metal is said to *clank*: this word is phonetically inspired on the very sound conveyed by its meaning as it is (1) perceived by the speakers and (2) reproduced according to the constraints of English phonology. These are the principles of OP across historically documented languages:

There is an open set of infinite noises in the world... Nevertheless, we tend to accept many instances of onomatopoeia as quite adequate phonetic equivalents of the natural noises. How can language imitate, with such a limited number of speech sounds, an infinite number of natural noises? Take the bird called "cuckoo". The cuckoo's name is said to have an onomatopoeic origin: it is said to imitate the sound the bird makes, and the bird is said to emit the sound [kukuk]... the bird emits neither the speech sound [k] nor [u]; it uses no speech sounds at all. It emits two continuous sounds with a characteristic pitch interval between them, roughly a minor third. These sounds are continuous, have a steady-state pitch and an abrupt onset. The overtone structure of the steady-state sound is nearest to the formant structure of a rounded back vowel, and the formant transitions indicating a [k] before an [u]. That is why the name of this bird contains the sound sequence [ku] in some languages... First, behind the rigid cat-

egories of speech sounds one can discern some rich pre-categorical sound information that may resemble natural sounds in one way or other; and it is possible to acquire auditory strategies to switch back and forth between auditory and phonetic modes of listening; and second, certain natural noises have more common features with one speech sound than with some others. (Tsur 2001).

As for Phono-Iconicity, henceforth PI (the term ‘sound-symbolism’, often used in this context, implies the opposite of what it says: we are not dealing with arbitrary *symbols*, but with motivated *icons*), it is narrowly related to OP. PI does not result from a direct imitation of natural sounds, but it displays nonetheless a relationship – either conscious or subconscious – between sound and meaning. Therefore if some of the following data belong to PI rather than OP, this should not prevent them from being treated in this framework. I shall show the extent to which OP and PI are related to LUIT (Kirtchuk 2007 and forthcoming).

Darwin (1872) intuited that the origin of language (OL) is in pre-linguistic communication founded on prosodic and intonative devices based to a large extent on the imitation of natural sounds. So does our contemporary Maturana (1973 *sqq.*). Fonagy (2007) shows the importance of emotional factors in the way language functions at its present stage and Bolinger (1949 *sqq.*) shows the adequacy found in language, to some extent, between content and form, *i.e.* iconicity, whose best exponent are of course OP and PI. Language originated as the systematization of permanent communication in context, presumably triggered and guided by emotions and characterized by a high degree of OP and PI, yet those factors continue to permeate language at its present stage too. OL is narrowly linked to OP and PI, but OP and PI are part and parcel of Language itself at whatever stage. As far as the emergence of the language faculty is concerned, naturally we only dispose of languages with at most 5.000 years of documentation and of reconstructions which harken back only twice that period, namely 10.000 years, but they are valuable pieces in *LUIT – Language: a Unified and Integrative Theory* (Kirtchuk 2007 and forthcoming), which proposes an elegant, consistent and coherent solution to a puzzle - the puzzle of Man, of which language is a major, indeed an indispensable piece. Those languages and reconstructions allow to solve the puzzle of language provided one brings into consideration other data as well, *e.g.* the anatomy and physiology of the pharynx, larynx and the organs they contain, and especially their ontogeny and phylogeny, as well as those of Broca's and Wernicke's areas in the brain. Suffice it to say that physicists and biologists dispose only of observable data, which does not prevent them from using those data in order to build elegant and consistent theories about the emergence of the Universe (some 15 billion years ago) or life (less than 4.5 billion years – the age of the earth – ago). The emergence of language is a much more recent phenomenon. OP, which we can grasp through actual tongues such as Hebrew, is a major device in our understanding of language and the way it functions, not only diachronically, phylogenetically or ontogenetically, but also synchronically, in our very own mouth, ears and brain. This evidence would suffice to corroborate Lamarck (1801-1809) corrected by Darwin (1859).

2. Hebrew Data and Discussion

Hebrew has several advantages as far as linguistic research is concerned, particularly when topics as central as OP and PI are at stake. On one hand, it has a long and well-documented history; on the other, it has been reactivated barely one century ago. The first situation is uncommon, the second unique: yet both display OP and PI, proving that it is a deep, far-reaching and lively device of linguistic expression. Were OP and PI characteristic only of the early stage of particularly old languages, we would expect to see it in Biblical Hebrew (BH) but not in its contemporary counterpart; were it typical of child-language, we would expect it to have no significant influence on grammatical and lexical structures; were it to reflect only emotional, oral and spontaneous imitation of sounds found in trivial situations, we would expect it to be absent from grammar and from highly systematized, symbolic, context-independent communication in general. None of these expectations is fulfilled: just like intonation-prosody, deixis and iconicity, OP and PI too are found in all languages, moreover in their very grammar, and in all their diachronic stages, synchronic uses and stylistic registers, including those of Hebrew. Yet it is convenient that Hebrew, of all languages, serve as a focal point to universal inquiry. Indeed, we are not dealing only with Hebrew as such but with the language faculty, and with the form of life it characterizes, *i.e.* Man. One generation after Weinstock (1983) we no longer consider the [biological] origins of language as a taboo. It is a licit question, provided it is explored by scientifically acceptable methods (Kirtchuk 1993). OP and PI are key-pieces in this connection.

Hebrew displays OP and PI from its oldest layers to our day. Far from being an amusing mechanism with rather limited presence and influence, OP and PI permeate the Hebrew lexicon and grammar deeply, widely and consistently. In order to show it, a brief introduction to the theory of the root in Hebrew and beyond is necessary.

The 3-P (3 phoneme) structure of the Semitic root conceived by the Arab grammarians and applied to Hebrew by Yehuda Hayyuj (10th century CE) levels all roots into a single pattern, at the cost of intellectual operations which necessitate a high degree of abstraction, nay invention, since they posit a third consonant when only two or even a single one are actually present. An opposite view, according to which Hebrew roots are bi-phonemic to begin with has been suggested by Leibniz (1672-6), Gesenius (1871), König (1895), Halevy-Hurwitz (1913), Bergsträßer (1962), Diakonoff (1965), Ehret (1995) and Bohas (2007). Kirtchuk (2003, 2007, 2009) shows the relevance of this view within the framework of *LUIT* and enlarges its scope from diachrony to synchrony, from semantics to cognition and from Hebrew to Semitic. Indeed, a proper analysis of the alleged 3-P roots in Biblical Hebrew allows recasting them into 2-P groups whose number is reduced by a whole order, from 10^3 to 10^2 . Moreover, in this realm lexicon and phonology are linked: the phonemes most frequently used to expand 2-P roots, modulate their basic meaning and restrain their application to a particular context or field are the reduplication of the second phoneme, or of both, or the adjunction of a sonorant of the group:/l, m, n, r/, or of vowel length represented in some forms of the paradigm by

/w, j/, or of an expressive ('guttural') of the group /h, ʔ, ʕ, h/. As the bi-phonemic elements at the basis of the tri-phonemic expansions often reproduce a natural sound, they reflect OP. It follows that the original root-bases included a perceived vowel or a sonorant implied by the very process of imitation to which OP and PI boil down to. It is from the syllable so formed that the bi-phonemic element was abstracted (Lipiński 1997). Which means that the structure of Semitic and Indo-European roots is identical, enhancing Greenberg's *Eurasiatic* (2005) and Dolgopolsky's (2008) *Nostratic* – two different terms for a fairly identical reality, *i.e.* the common ancestor of Afro-Asiatic, Indo-European and other language families, descended ultimately from a single stem (Greenberg's *Proto-sapiens*).

Here is a list of those bi-phonemic groups whose onomatopoeic basis, which probably contained a vowel or a sonorant, is easy to grasp – even if the Hebrew forms are not exactly those reconstructed for Proto-Semitic (Dolgopolsky 1999), Afro-Asiatic or an even more remote ancestor, *cf.* Greenberg (2005) and Dolgopolsky (2008) – with their respective expansions (see also McCrum 1997, Nänny & Fischer 1999). The list is based on a thorough analysis of BH roots. The general sense of the bi-phonemic root is given in bold. For some of them, a possible overall sense is added *in fine*.

b/p-z/s/lz: sound made by a **swift movement** (*cf.* Eng. *buzz*)

bzz 'spoil, plunder' (*cf.* *baz* 'falcon'), bzbz 'waste', bzy 'despise', bwz 'despise', nbz 'despise', pzz 'be agile, excited; hpz 'be in a hurry', phz 'be excited > reckless', **ṭṭ** 'move swiftly and] seize'

b-h: sound made by a **frightened** person or meant to cause that effect (*cf.* Eng. *boo*)

bhl 'dismay', bhy 'chaos', bhh 'contemplate with dismay'

b/p-h/ʕ/w/y: sound made by a **springing / boiling / inflating** fluid (*cf.* Eng. *boil, bubble*)

bwʕ / bʕʕ / bʕbʕ 'boil, bubble', nbʕ 'spring', nbʔ 'prophesize < utter a flow of words', bʕr 'sound made by burning matter', bʕy 'cause to swell or boil up'; pwh 'inflate, blossom', nph 'inflate', yph, phy, pht 'deflate', tph: 'blow, inflate, deflate', **ʔpy** '[inflate by] cooking (dough and the like)'. The following is a variant with an occlusive (post-) velar:

p/b-g/q: sound made by an explosion or a violent movement outwards, including a fluid (liquid or gas) stirring up, flowing, blowing, gurgling or whirling intermittently

bky 'cry', bwk / bwq '(stir up water or spring >) be confused'; nbk 'spring', 'bk 'whirl', ʔbq 'dust', pky 'trickle', hpk 'overturn, make into a shambles' (*cf.* BH buqa 'waste following a cataclysm', mah^apeka 'overturn'); baqbuq (Jer 19, 1; 10 'clay recipient, CH vessel', bqq 'flow', Jer. 19, 7 'flood, ruin' (*cf.* BH river and sources names ʕejn boqe, jaboq), pgl 'reject', pgʕ 'hit (> get in contact with, *cf.* Eng. 'hit the road')', pgm 'hit, wound', pgr '[hit > faint >] die', pgʕ '[hit > get in contact with >] meet', pwg '[be hit >] go numb', pgy 'bloom of the fig', pqqq '[go out of certainty >] doubt', špq '[go out of stock, antonym] suffice', pwq 'bring outwards', ʔpq 'flow outwards', pqʕ 'spring off (buds from plants)', bqʕ 'spring off (birds from eggs)', pqh 'open eyes / ears / mind', pqd '[hit / set apart >], appoint, fall upon, issue'

p/b-ʕ/t/ʕ/: sound made by a **burst / breaking** of a solid (*cf.* Eng. *burst*)

pšš 'break', pšps 'break into pieces', pys 'scatter', npš 'shatter', pšh 'cause to break', psl 'split, press', pšr 'press', pšf 'break, wound', pšy 'open', pšm 'split open', bšf 'cut', bšr 'cut apart, protect', ypš 'shine out', nbš 'sprout', btš 'to open lips'

p/b-r/l: sound made by **iterative or sudden separating, dismantling, scattering**,

pr? 'wild ass', pl? 'separate from the ordinary', prd 'divide', plg 'split', pry 'burst in fruit', ply 'be separated', prr 'split, divide', prh 'bud, sprout, shoot / fly away', plh 'cleave', prt 'break off', pl? 'escape', prk 'display violence', plk 'territorial subdivision', prm 'unsew', prf 'become loose', prp 'unbind', prs 'divide', prš 'break through', plš '[break through and] invade', plš 'shudder', prq 'dismantle', pll 'separate right from wrong > judge or pray for [clement judgment]', prs 'expand', pls 'weigh out', prpr 'tremble', spr 'leap, be agile', spl 'disappear', npl 'fall', brh 'escape', brq 'lightning separating the sky', brr 'separate', bdr 'district (cf. plk above)', pzz 'scatter', bzz 'distribute', prz 'open', brz 'appear'

burst, divide

d-š: sound made by **hitting an object** (cf. Eng. *dash*)

djš 'thread', dš? 'that which is marched upon > grass', dšn '[smear with] oil or greasy matter', ?dš 'beaten to apathy', cf. CH dšdš 'marching repeatedly or fast without advancing (e.g. on sand or mud)',

t/ṭ-q/h: sound made by **hitting a hard object** (cf. Eng. *tack*)

btq 'cut', ntq 'separate by cutting', ṭtq '[cut and] transfer', rtq 'seize', štq 'cut (stop) talking', ṭhy/twh 'shoot', ṭhr 'eject', ṭhN 'grind', tyh 'besmearing a wall'; cf. CH tah [tax] 'strong noise'.

ṭ-p: sound made by a **dripping liquid** (cf. Eng. *tap*)

ṭpṭ 'drip', ṭpṭp 'drip', ntṭ 'spill', twṭ 'drip', ṭpṭ 'march as if dripping', tnp 'dirt', štp 'overflow', ššp 'overflow furiously'

'drip, flow intermittently'

g/k/q-z/š/š: sound made by **tearing or stripping apart**

gzz 'shear', gwz 'vanish', gzy 'cut stone', gzl 'steal', gzm 'cut', gzz 'cut', qss 'cut off', qzz 'cut off', qss 'strip off', kss 'divide up > compute', qsm 'distribute', qsy 'cut off', yqs 'awake', qws 'thorn', qsb 'cut off, shear', qsp 'splinter', qsf 'cut off', qsr 'shorten', qšš 'cut and gather stubble', qšy 'be hard' (cf. miqšā 'hammered work'), nqš 'beat', qšh 'be rough'

g/k/q-l/r sound made by **rolling or flowing**, a 'round' sound (cf. in many languages *gloogloo*, and the like for the same purpose; cf. also the terms for /l/: a *liquid*, and for r, in French: *roulé*, cf. Eng. 'a rolling stone' someone moving to and fro'; 'surround' move around so as if to contain)

gll/glll 'roll', gly 'move / wave /dis-cover', grr 'drag away', grm 'erode', grp 'take away', gwr 'sojourn for a while (then moving away)', grš 'expel', grf 'diminish', grs 'grind', gry 'small coin', grgr 'grain', krt 'amputate', grn 'threshing ground', ngr 'flow', ?gr 'gather < converge', ?gl 'dripping dew', rgl 'go around', ?gn 'bowl, bassin', kll 'surround, contain', klll 'provide', ykl 'contain, be able', ?kl '[surround, contain by] eating', kl? '[surround, contain against somebody's will] imprison', kly '[surround, contain by] a recipient > tool', škl > '[surround, contain by] digestion', klh '[surround, contain by] exerting power', kwl 'contain', nkl '[surround, contain by] cunning', klb '[surround, contain by] encaging', klm '[surround, contain by] iniquity', krr 'semi-spheric hollow recipient > measure of fluids', kwr 'semi-spheric, hollow furnace', kry 'make hollow, spheric, dig a hole', nkr 'take a deep and

comprehensive look > know, recognize', krš 'deeply bow', krs '[round] belly', qll 'be slight, swift, trifling'

cyclic / circular / spheric movement / position / volume

q-b: sound made by **hitting something in order to make a hole in it, tapping**

qbb 'vaulted tent, utter curse against'; nqb 'pierce, hit, curse', qby 'stomach', yqb 'hollow, cavity', qbl 'opposite > attack > take > get > receive (for the semantic process, see eng. 'get')', qbr '[dig a] grave', qbš '[hollow] cup', rqb '[get hollow by] rotting'. CH: [kavkav, kafkaf] 'type of sandals which taps the ground'

k/q/h-t/t sound made by **cutting or percuting** (cf. Eng. *cut*)

ktk percute', ktš 'bray', ktl 'cut into blocks > wall', ktb 'lisrot > write', ktr 'cut around > crown', ktṗ 'shoulder', lqt 'pick', qwt 'break', qtb 'destroy', qtl 'kill', qtm 'amputate', qtn 'belittle', qtš 'cut', qtp 'pluck off', htt 'break', htth '[break through] obstacle in path', htḳ 'cut', htł 'wrap', htm 'cut short > seal'

q-r: sound made by **shivering**

qrr cold, qrh 'ice', qwr 'bore, dig', qry 'befall', qr? 'befall', dqr 'pierce', nqr 'bore, dig', qrn 'horn', yqr 'hard > dear', qrš 'tear', qrb 'battle', qrs 'hook', qrš 'sting'

exert pressure on one point in space or time.

š/š/lz-f: sound made by **whistling or hissing**

špr 'peep > bird > cover or call by noise > fly over', špp / špsp 'chirp, peep', špy 'lay out/over', špš 'offspring; snake's hiss', šwṗ 'float over', ršṗ 'pave over', šph 'be wide over', špn 'cover, put veil over', špd 'draw together, contact over' (cf. CH [tsif-tsif] 'birdsong'), špp 'horned snake', šwṗ 'bruise', špy 'sweep bare', nšṗ 'blow', nšḥ 'blow', špl 'be abased to the ground like a snake', špš 'abundance', špr Aram. 'unveil' > šapra 'break of dawn', Ḍpy 'lip' blowing horn, beauty, good health, good disposition (cf. in many cultures, whistling as an expression of admiration towards beauty)

š-s: šsy 'plunder', ššš 'divide, cleave', šsp 'hew (probably from ššš + syṗ 'sword')

m-š: sound associated with **caressing, fondling** (for palatality as an affective feature, cf. Fonagy 1983, Kirtchuk 1987)

mšš, mšmš, ymš, mwš 'touch with care, feel with one's fingers', mšh 'smear, anoint'

m-l/r: sound made by **parting one's lips** (cf. Eng. *Murmur*)

mwł 'cut', mll 'articulate, utter', mlml 'utter', mlq 'nip off', mhl 'adulterate wine' (cf. Fr. 'couper le vin'), mrh 'rub', mrq 'scour, polish', mrṭ 'scour, polish', mwr 'move to and fro > change', mrr 'passe by > drop', ?mr 'say', ymr 'pretend', mry 'be contentious, refractory, rebel'

cut [apart] > separate lips > utter

m-h/g/k/q: sound made by **striking** (cf. IE *még- 'hit > fight > power, able > big > man')

mhy 'strike', mh? 'strike', mhq 'erase', mhš 'smite', mhṭ 'squeeze', mwg 'vanish, be afraid, weak', mwk 'be poor, weak', mkk 'weaken', mwq 'mock', mqq 'rot', ṡmq 'low, deep'

l-š/q: sound made by **chewing and swallowing**

lšš 'swallow', lwš 'speak', blš 'swallow', lšt 'swallow greedily', lšs 'chew', lšz 'talk unintelligibly', lšš-tlš 'jaw', lšb 'jest', ṡlg 'speak strangely', lšg 'mock', lglg 'mock', lhg 'speak much'

l-q: sound made by the tongue and lips when **licking or lapping**

lqq 'lap, lick, glean with one's tongue', CH lklk 'id.', lqt 'pick, glean',

n-q sound made by the throat when **groaning, sighing, sucking** and the like

?nq 'groan', n?q 'id.', ?nh 'sigh', ynq 'suck', qyn 'mourn aloud', qnn 'id.'

r-ṭ: sound made by **shivering, trembling**, possibly with metathesis

rṭṭ 'tremble with fear', rṭš 'dash into pieces', lṭš 'sharpen'

r-q/g/k: sound of feet **tapping on the ground**

rqd 'dance', rqṣ 'stamp, beat', rqh 'beat and mix', hrg 'kill', rqm 'variegate', rgz 'agitate', rgl 'go about', rgm 'lapidate', rgn 'backbite', rgṣ 'disturb', rgš 'be in tumult', rkk 'make tender by beating', rwq 'emptying, making void', rqq 'making thin'

r/l/n-h sound made by **humming or smelling**

ryh 'odour', rhrh 'smell', lyh 'humidity', lhlh 'moisten', srh 'smell bad', nhh 'fragrance', rwh 'wind'

ṣ-k/q sound made when **charging a heavy object**

ṣks 'rattle, tinkle', ṣkr 'disturbing, noise', ṣwq 'totter', ṣqy 'press', yṣq 'distress', ṣgm 'be grieved', ṣgn 'strain', ṣqb 'heel, footprint', ṣqd 'tie fast', ṣql 'bend, twist', ṣqm 'curve', ṣqr 'hamstring', ṣqš 'twist'

h/ṣ-m: sound made in **reaction or desire of sensual** (gustative, tactile...) **pleasure** (cf. Eng. *mmm*, Fr. *miam*)

hmm 'warmth', yhm 'sexual heat', hmm 'protect', hmd 'desire', hwm 'auburn', hmr 'red', hml 'pity, human warmth', rhm 'mercy, womb', hms 'treat violently', hms / ?mš 'be red', hmt 'recipient for [red =] wine', nṣm 'arouse by words, be agreeable', n?m 'deliver a speech', nhm 'soothe by words, console', hamula 'noise of words or otherwise'

h-r: sound of **piercing or engraving** by metal or fire (cf. Eng. *en-gr-ave*)

hrt, hrṭ 'engrave', hrš 'plow / forge', hrs 'scratch', hrš 'trench', hrk 'shades', hrr 'make a hole', hrb attack, hrg 'rage', hrd 'fear', hry 'burn', hrk 'set in motion', hrl 'dry', hrm 'exterminate, forbid', hrs 'sun' hrš 'gold', hrp 'blush', hrq 'gnash'

h-s / š -q: sound made as to **imitate or induce silence** (cf. Eng. *hush*)

hsy 'quieten', (h)šqt / štq 'be quiet'

q-r sound made by a rooster **crowing**, qrqr 'hen's cluck'

h-š: sound made by **cutting through** with an obtuse object

hšš 'cut through', hšy 'cut through', hws 'outside', hšb 'dig out', hšr 'clear up', l/nhš 'exert pressure, urge', šhš 'vanity'

h-q sound made by a **sudden or repeated inspiration of air**

ghq 'chug', šhq 'gasp', phq 'yawn'

h/?-š sound made by **swift movement**

hšš 'hasten', hws 'haste', wš 'lend help'

Punctual examples in BH are:

?oy, ?^aboy 'lament' (Is. 24, 16, cf. Lat. *vae*), dah^aroṭ dah^aroṭ 'galloping' (Jud. 5:22)

CH being essentially a projection of older stages of the language (vocabulary and morphology inspired on BH, syntax inspired on MH), it displays OP and PI in the roots inherited from BH, but it has also created its own OP and PI elements in the typical domains of animal expression, movement and natural phenomena. They are often metaphorized to denote the expression of human emotions (cf. also Darwin 1872). Here are the most notorious examples of CH verbal roots inspired on OP.

zmzm 'buzz', ptpt 'chat', ršrš 'bruise like paper or banknotes', špšp 'rub', drdr 'let stones roll downhill', hmy 'coo', mlml 'murmur', nšnš 'pick small quantities of fruit, grains or the like at random from larger heaps or servings', slsl 'make sonore or visual circumvolutions', flq, šos, zbgz 'hit somebody in different manners, provoking different (and characteristic sounds, < Yidd.), dšdš 'walk upon mud', bq bq 'bottle', ndnd 'swing', šfšf 'tweet > despise', šyš 'chirp > utter', lkk 'lick > adulate', lk lk 'lick', kḥkḥ 'rackle one's throat', hnhn 'hum in acceptance', zpzp 'zap', dḥdḥ 'leaf, flip', šqšq 'shiver, tremble, totter > fear', hmhm 'purr', škšk 'bath one's feet in a river, lake or the like', šlšl 'ring', gfy 'moo > cry aloud', gfgf 'quack', krkr 'croak', pšy 'bleat', šhl 'whinny, neigh > rejoice aloud', yll 'meow > complain', ʕš ʕš 'sneeze', kwḥ, kškf, grgr, npp 'speak through one's nose, emit nasalized sounds', gmgm 'stutter', šrq 'whistle', hmhm 'murmur in one's beard', mšmš 'blink', pmpm 'pump', gnḥ 'groan', nḥr 'snore', gwr, dhr 'gallop', nbḥ 'bark', ḥššr 'blow a trumpet', tss 'ferment', qss 'bite one's nails'.

As it can be seen, verbs created on onomatopoeic roots are often built on the patterns C₁C₂C₁C₂ or C₁C₂C₂. Much like in BH, in Semitic, or – as far as those patterns represent reduplication - in language in general. Indeed, reduplication and OP and PI are often associated, although the scope of reduplication is much wider on iconic grounds: it may reflect repetition at the semantic or pragmatic level, and not only at the phonological level (for a comprehensive bibliography, see Magnus 1997-2006). It may even be one link between raw and proto-grammaticalized communication *'Reduplication of the syllable in the [Hebrew] word "lʿtsaftsef" relates it to the transition from the child's babbling stage to the [...] use of verbal signs'* (Tsur 2001) ; *'By the repetition of the same syllable children signal that their phonation is not babbling but a verbal message'* (Jakobson & Waugh, 1979: 196, cf. also Waugh 1993). This phenomenon, highly iconic and constitutive of language in ontogeny but also in phylogeny, creolistics, pragmatics and even in the synchronic grammar of any given language, reflects OP and PI inasmuch as it allows for the sound transmitted to be more evidently represented, and more closely to its natural manifestation, which is often repetitive and not semelfactive. In other words, OP and PI in Hebrew are iconic not only inasmuch as they reflect a direct link between sound and meaning, but also inasmuch as they contain iteration, just like (often) nature. OP and PI helps grasp Man not as a context-independent, symbolic, arbitrary and rational species but as one whose members are *capable*, as Jonathan Swift had it, of projecting themselves beyond immediate context and have access to reason and symbols, and yet who are, like the members of any other animal species, anchored in emotional, sensitive, iconic, context-dependent

representations. Thus OP and PI make a decisive contribution towards our understanding of our own species. To say it with Sir Arthur Eddington (1920): ‘We have found a strange footprint on the shores of the unknown. We have devised profound theories, one after another, to account for its origins. At last, we have succeeded in reconstructing the creature that made the footprint. And lo! It is our own’.

3. Epilogue

Time has come to explicit the way in which OP and PI are an important piece of LUIT (Kirtchuk 2007 and forthcoming). Language is comparable to an iceberg of which grammar, with syntax at its summit, is but the visible part. From a structural viewpoint, ‘morphology is yesterday’s syntax’ (Givón 1976), but yesterday’s syntax is the previous day’s pragmatics and *Homo sapiens sapiens* language is the descendant of hominid vocal-cum-gestural communication (Hewes 1973, Kimura 1979, Kirtchuk 1993). In actual language, both levels coexist, and in certain circumstances (highly emotional and/or spontaneous and/or urgent, &c.), communicational needs override grammar. In other words, not only *Parole* is the laboratory of *Langue* in diachrony but in several respects it also prevails in synchrony, and that is true also in ontogeny, phylogeny, creology and borrowing. Structuralism mistook the iceberg for a mountain and attributed a real existence only to language’s systemic apparent - and apparently separate - parts, while Generativism inverted perspectives altogether, presuming that the mountain’s summit (grammatically speaking syntax; psychologically speaking ‘competence’) generates and commands the ‘lower’ levels. As both approaches failed to recognize the iceberg, they inevitably collided with its submerged part. Now OP and PI are at the very foundation of that part.

Linguistic analysis must reflect the unity of language and not impose on it a division into domains which have little or no connection with each other, blurring what language is and the way it works. Syntax is certainly not autonomous, but neither are phonology, morphology or lexicon; language’s first aim is communication, *i.e.* transmitting pragmatic and conceptual content, and the means to do it is form, which in itself conveys and to a tangible extent reflects meaning, since the linguistic sign is not completely *arbitraire* but to a great extent iconic, as we have just seen.

Doing scientific research can be likened to assembling a jigsaw puzzle, with several differences : (1) the pieces of the scientific puzzle are not pre-established: it is up to the researcher to determine which piece of evidence belongs to it and under which form; (2) the researcher does not have a model of the puzzle sought for; (3) the researcher does not even know the number and nature of dimensions of the puzzle, namely the domains which have to be properly assembled: as far as language is concerned, pragmatics, grammar, prosody, semantics, but also biology and psychology, among others, are several such dimensions; (4) this jigsaw puzzle itself is but a piece among others in a jigsaw puzzle of a higher order, which is itself a piece in a jigsaw puzzle of a higher order and so on and so forth. *Exempli gratia*,

language itself is but a piece of the puzzle of communication, in which devices both more ancient and more central than verbal language - and certainly more universal than the structure of any given language - continue to play a preponderant role. Communication itself as a permanent activity, however, is a defining property of our species, from which other defining properties derive, including language and its own derivatives conscience, reason and thought; as such, language is a piece in the puzzle of *Homo sapiens sapiens*, who is a piece in the puzzle of life, &c. Assembling them is the painstaking and sometimes painful pleasure called science. When assembling a puzzle, one has sometimes to leave one part unfinished, then work on another part and leave it unfinished as well, and so on; only then, once the context has changed substantially, should one go back to the first part. Likewise, crucial issues in the linguistic puzzle cannot be elucidated if only linguistic evidence is considered. Only if we take in account other factors as well will the manifold reality of language reveal some of its best kept secrets. Language is but an expression, albeit probably the most complex one, of human properties which are not linguistic in themselves. Accordingly, it must be explored within a larger framework that comprises other sciences of life too. It is not mathematics that language and linguistics are related to, but biology. In other words, the jigsaw puzzle of higher order superior to linguistics is biology, and the natural phenomenon superior to language is communication, and above it, life as displayed in our species. Crucial issues in the linguistic puzzle cannot be elucidated if only linguistic evidence is considered. Only if we take in account other factors as well will the manifold reality of language reveal some of its best-kept secrets. All this implies a holistic approach: the local is by no means equivalent to the global. Giambattista Vico is right: time has come for a *Scienza Nuova*.

True, linguistics has always applied to biological metaphors (language *families*, *branches*, *trees*, &c.)¹. Yet language is linked to biology not metaphorically but fundamentally, in its very essence. It is in this sense that LUIT is integrative: it integrates language into a broader framework. One corollary is that the concept 'natural language' is a pleonasm. Another corollary is that 'sign language' as well as other types of so-called 'languages', including animal 'languages'; computer 'languages'; artificial 'languages' (!) such as Esperanto; &c. are not languages save in a metaphorical sense. Sign 'language' is undoubtedly a great tool of communication for people with speaking and/or hearing impairments, but it still is an adapta-

¹ Trubetzkoy said as early as 1932: 'There are some facts which deserve reflection. Firstly, it is clear that we must pay attention to the statistic part of phonology ... And secondly, one has to get familiar with biology. Causal explanation is not quite convincing and not bound to be proven. Yet an analogy between the biological laws of evolution and the laws governing the evolution of sign systems is possible' (1932: 296). Much like Karl Bühler, to whom he was attached by a fructuous scientific exchange all along the 1930s as well as by mutual admiration, the author of *Grundzüge der Phonetik* refuses an explicit and direct link between language and biology, language and evolution. Yet, he too acknowledges, *nolens volens*, at least an analogy. Given on one hand the intellectual span of both characters and on the other hand their spatio-temporal *Zeitgeist* (Structuralism, [Logical] Positivism, the *Wiener Kreis*), even a term as timid as 'analogy' deserves to be quoted in this context.

tion, of necessity partial and imperfect, of both the language faculty and a particular language *in the first and only non-metaphorical sense of those terms*, artificially made up for people who cannot exert this faculty and communicate in that language due to their abnormal condition: such a sign system is neither a faculty nor a language in itself. To give but an example, pretending that 'sign language' is endowed with phonology is not to understand what phonology is, what the language faculty is and what particular languages are. The larynx of a normal adult *Homo sapiens sapiens* is positioned lower than in the other mammals' but in the infant who has not yet enacted the language faculty it is positioned like in the other mammals; on the other hand, a human adult hand, an ape's hand and a human infant hand present the same anatomy. This is of the highest importance in this respect: phonetically articulated language influences our very anatomy, whilst 'signed' language doesn't have any such influence.

It is the task of linguistics to disclose the unity underlying the different aspects of language and the relationships among them. Grammar, *i.e.* the structure of the linguistic system, is the specific domain of linguistics – biology, psychology, philosophy won't deal with that specific component of language. Yet grammar results from the dynamical introduction of a symbolic order in the initial entropy proper to interaction based on pragmatic criteria and communicative needs, expressed by highly iconic means including among others OP and PI. As this dialogic interaction and these criteria, needs and means are always there, grammar fades away as soon as it bothers communication rather than helps it, as communicative factors - greater urgency, emotivity and the like - require it. Grammar is a means, not an end, let alone an organ: in this case, we would expect a gene for the passive participle, another one for the subject function... which might, moreover, be impaired : some speakers would be unable to obtain the second person of the dual masculine at the optative mode. Yet such speakers are not to be found.

It is the task of linguistics as well to reveal the links between that particular aspect of language with its other aspects. In other words, linguistics is at the same time specific and general, it deals with structural components but at the same time it should deal with language as a whole and as a part of a larger phenomenon. Indeed with language *qua* puzzle, a key part of another puzzle. OP and PI are, along with Intonation-prosody and with gestu-vocal deixis, at the very origin of the language faculty. And just like Intonation prosody and deixis, OP and PI are still there, alive and kicking, at all stages and types of present day language, be it the newborn's or the adult's, oral or written, isolating, agglutinative or flectional. OP and PI are count among the most proving evidence to the biological origin of language as intuited by Darwin (1872), corroborated by a biologist such as Maturana (1978, sqq.) and by the author of this lines. OP and PI confirm that the greatest imitator in Nature is a primate indeed, but not the chimpanzee or the bonobo. It is *Homo sapiens sapiens*.

Temptation is great to consider OP and PI as rather primary and even silly devices, not compatible with deep scientific insight and unworthy of being among the essential properties of a phenomenon as complex as language. Science, however, is

not an intellectual Beauty contest and the scientists' subject matter is not their own navel nor their peers' navels nor the navel common to them all. Science is not all about showing (off) intelligence, it is all about arriving to results agreed upon by reality. It is not to their peers that scientists are accountable in the first place and as last resort but to reality. Formal linguistics, which often builds conceptual architectures that display great beauty and subtle intelligence, does not seem to consider linguistics as a science, since it enjoy transgressing each and every one of those truisms.

In the framework of LUIT, several notions are reconsidered and other are presented which allow attaining a better comprehension of language, its expressions, the factors that influence it and the species that developed it. Thus, LUIT hopefully confirms Kuhn's thesis concerning the structure of scientific revolutions: significative progress in science does not consist of cumulative, steady and linear work - undoubtedly indispensable - but of successive revolutions by which an existing paradigm ends up being replaced by a radically different one.

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