FROM NEWTON'S LAWS OF MOTION TO THE PERIODIC TABLE OF SEMANTIC PREDICATES

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In this contribution I undertake the task of proposing a solution to a significant problem in semantic role theory. As a sequel to the solution that emerges, I wish to erect a periodic table of semantic predicates.

1.0 PRESENTING THE PROBLEM

In order to state the problem to be tackled in this paper, I propose to make contact with four texts on English Language and linguistics. The intended contact pertains to their treatment of role theory.

In their influential grammar of the English language Quirk et al (1985: 741) duly remind us that

> analysis of participant roles has not achieved a general consensus, nor has it fully explored all distinctions … [their] description must therefore be considered tentative.

On the other hand, Brown and Miller (1991: 308) justify their description of role theory by "its offering a degree of both generality and particularity [although] it has no easily defended validity … [and] there seems to be no alternative in the current state of knowledge."

While Fromkin et al (2003: 192) prefix their list of roles with a reassurance to the effect that "the list is not complete", Larson and Segal's (1995: 489) considered

* What the reader should be aware of from the very outset of this paper is that it is a revised edited amalgam of two previous one: "The Situatodomainal Theory" and " The Complete Periodic Table of Semantic Predicates", both being accessible at www.luganda.com

stance on the nature and number of semantic roles is the most pessimistic, for they write:

> The upshot is that we regard the question of which thematic roles there are and how they are defined as empirical ones, to be resolved in the usual way: by investigations that construct specific theories making detailed and specific predictions. Preliminary theories of this kind have been proposed; however, it is likely that resolving thematic roles precisely will require a great deal of investigation, involving domains beyond linguistics. It is worth remembering that fully 22 centuries elapsed between the first suggestion of the atomic theory of matter, in which all substances were factored into earth, water, air, and fire, and the elaboration of atomic theory by John Dalton, in which a more complete and satisfactory set of atomic constituents was proposed. Finding elementary constituents can evidently be a long-term project.

Admittedly, the development of atomic theory was tortuous; but we need not resign ourselves to a similar state-of-affairs with regard to role theory. The objective I am poised to pursue in this paper is to bring the problem of determination of semantic roles closer to its solution by propounding a so-called "situatodomainal theory". Taking my cue from Larson and Segal, I embark on the quest for semantic roles, in relevant areas beyond linguistics with extraordinary keenness on mechanics.

2.0 RELEVANT AREAS BEYOND LINGUISTICS

2.1 Newton’s Laws of Motion

Newton’s First Law of Motion states that if $\vec{\mathbf{F}} = \vec{\mathbf{O}}$, then $\vec{\mathbf{v}} = 0$ or $\vec{\mathbf{v}} =$ constant, where $\vec{\mathbf{F}}$ is the total resultant force exerted on the particle and $\vec{\mathbf{v}}$ is the velocity of the particle.

Newton’s Second Law of Motion states that if $\vec{\mathbf{F}} \neq \vec{\mathbf{O}}$, then $\vec{\mathbf{a}} \neq \vec{\mathbf{O}}$, where $\vec{\mathbf{F}}$ is the total resultant force exerted on the particle and $\vec{\mathbf{a}}$ is the acceleration of the particle.

Newton’s Third Law of Motion states that if particles 1 and 2 are in contact, then $\vec{\mathbf{F}}_{12} + \vec{\mathbf{F}}_{21} = \vec{\mathbf{O}}$ i.e. $\vec{\mathbf{F}}_{12} = -\vec{\mathbf{F}}_{21}$ where $\vec{\mathbf{F}}_{12}$ is the force exerted on particle 2 by particle 1 and $\vec{\mathbf{F}}_{21}$ is the force exerted on particle 1 by particle 2.

In Sec 3 we shall refer to Newton’s laws as Newton I, II, and III, for the sake of brevity.

2.2 Arguments, Situations and Domains

Turning to certain academic disciplines (as will be indicated), I extract the following twenty-six argument-types:

(a) proposition p (from logic)

(b) set q
(c) number n (from mathematics)
(d) space ℓ

(e) matter m
(f) time t
(g) force k (German **Kraft** ”force”)
(h) energy d („disposition“) (from physics)
(i) electric current g (“Galvani“)
(j) light o (“optics“)
(k) sound a (“acoustics“)
(l) heat w (“warmth “)

(m) chemical object r (“res“) (from chemistry)

(n) biotic matter y

(o) plant b ("botanical") (from biology)

(p) animal z ("zoological ")

(q) human h

(r) sense e ("experience")

(s) cognition c (from psychology)

(t) value f ("feeling")

(u) psychophysical event v ("velocity")

(v) statement s

(w) question (issue) i (from linguistics)

(x) directive u ("urge")

(y) exclamation x

(z) system j ("joint") (from cybernetics)

In (1) we interrelate the concepts of semantic role, argument, situation and semantic domain:

(1a) $\theta\alpha = \sigma(\delta)$

(1b) $\theta_1\alpha_1\theta_2\,\alpha_2 = \sigma(\delta)$

where θ, α, σ, δ represent semantic role, argument, situation and domain respectively. In (1a) the predicate is monadic while in (1b) it is dyadic. Consider (2) for illustration.

(2a) $\underbrace{\text{Ali}}_{\alpha_1}$ saw $\underbrace{\text{the dog}}_{\alpha_2}$ $\qquad \theta_1\alpha_1\theta_2\,\alpha_2 = \sigma(\delta)$

(2b) $\underbrace{\text{Ali}}_{\alpha_1}$ hit $\underbrace{\text{the dog}}_{\alpha_2}$. $\qquad \theta_1\alpha_1\theta_2\,\alpha_2 = \sigma(\delta)$

(2c) $\underbrace{\text{The dog}}_{\alpha}$ died. $\qquad \theta\,\alpha = \sigma(\delta)$

At this stage-- where I have not yet presented my solution to the problem characterized in Sec 1--I can interpret (2a)-(2c) only in general terms. Incontrovertibly, the predicates SEE and HIT are dyadic while DIE is monadic. The situation in (2a), (2b) and (2c) is sensory, psychophysical and biotic respectively. I revisit (2) at the end of Section 3. Meanwhile, I commit myself to the domain-types: p″, q″, n″, ℓ“, m″, t″, d″, g″, o″, a″, w″, r″, y″, b″, z″, h″, j″, e″, c″, f″, v″, s″, i″, u″ and x″ in line with argument-types.

3.0 DETERMINING THE NATURE AND NUMBER OF SEMANTIC ROLES

In this Section I am intent on answering the outwardly absurd question: What relation obtains between motion and predication. Accordingly I proceed to a tabulated juxtaposition of motion with predication.

	Motion	Predication
	$m\vec{\mathbf{a}} = \vec{\mathbf{F}}$ $m_1\vec{\mathbf{a}}_1 + m_2\vec{\mathbf{a}}_2 = \vec{\mathbf{F}}$	$\theta\alpha = \sigma(\delta)$ $\theta_1\alpha_1\theta_2\alpha_2 = \sigma(\delta)$
1	Unaccelerated absolute Newton I: $m\vec{\mathbf{a}} = \vec{\mathbf{O}}$	Absolute $\theta\alpha = \sigma(\delta)$
2	Unaccelerated relative Newton I: $m\vec{\mathbf{a}} = \vec{\mathbf{O}}$	Relative $\theta_1\alpha_1\theta_2\alpha_2 = \sigma(\delta)$
3	Unaccelerated contactive Newton III:	Contactive $\theta_1\alpha_1\theta_2\alpha_2 = \sigma(\delta)$
4	Accelerated (causative) Newton II : $m\vec{\mathbf{a}} \neq \vec{\mathbf{O}}$	Causative $\theta_1\alpha_1\theta_2\alpha_2 = \sigma(\delta)$

If a situation is correctly formalizable as $\theta\alpha = \sigma(\delta)$ or $\theta_1\alpha_1\theta_2\alpha_2 = \sigma(\delta)$, then it is manifest that motion corresponds to predication. It remains to determine and name the θ's. Let the next table be considered in relation to the foregoing one.

	Motion-Predication Correspondence	Consequential Semantic Roles	Elementary Semantic Predicates
1	$m\vec{\mathbf{a}} \cong \theta\alpha$	θ = B,Z	[Σ]
2	$m\vec{\mathbf{a}} \cong \theta_1\alpha_1\theta_2\alpha_2$	θ_1 = B,Z θ_2 = R	[ΣR]
3	$m_1\vec{\mathbf{a}}_1 + m_2\vec{\mathbf{a}}_2 \cong \theta_1\alpha_1\theta_2\alpha_2$	θ_1 = N,T θ_2 = A	[ψA]
4	$m\vec{\mathbf{a}} \cong \theta_1\alpha_1\theta_2\alpha_2$	θ_1 = C,K θ_2 = E	[ΦE]

The appropriate names of the semantic roles are:

B : change bearer

Z : nonchange bearer

R : reference

N : dynamic contactor

T : static contactor

A : contactee

C : causer

K : anticauser

E : causee

Concerning the elementary semantic predicates, [Σ] = [B], [Z]; [ΣR] = [BR],[ZR]; [ψA] = [NA], [TA]; [ΦE] = [CE],[KE]

To conclude this Section, I may not assert but merely claim that there are nine and only nine semantic roles: B, Z, R, N, T, A, C, K, E. This position is the precise response to the question posed in Section 1 of this contribution. Correspondingly to the canonical semantic roles B,Z,N,T,C and K, six and only six situation-types suggest themselves, thus: β, ζ , ν, τ , κ and χ . As a provisional example of situation identification, let (2) in Section 2 be revisited in (3) below.

(3a) Ali saw the dog
NhAz = ν (e″)

(3b) Ali hit the dog
NhAz = ν(v″)

(3c) The dog died
Bz = β(y″)

4.0 CANONICAL FORMALIZATION OF A CORPUS OF SENTENCES

In order to expose any points of concurrence with some versions of the role theory I now analyse 65 sentences, …

(1.0)	<u>She</u> Affected	is	<u>happy</u>. Attribute

1.1 Zh = ζ(f″)

(2.0)	<u>He</u> Agentive	turned	<u>traitor</u>. Attribute

(2.1) Bh =β(f″)

(3.0) <u>The Sahara</u> is <u>hot</u>.
Locative Attribute

(3.1) $Z\ell = \zeta(e'')$

(4.0) <u>Last night</u> was <u>warm</u>.
Temporal Attribute

(4.1) $Zt = \zeta(e'')$

(5.0) <u>The show</u> was <u>interesting</u>.
Eventive Attribute

(5.1) $Z\beta = \zeta(f'')$

(6.0) <u>It</u> is <u>windy</u>.
Prop *It* Attribute

(6.1) $Z\beta = \zeta(k'')$

(7.0) <u>He</u> was at <u>school</u>.
Affected Locative

(7.1) $ZhR\ell = \zeta(j'')$

(8.0) <u>She</u> got into <u>the car</u>.
Agentive Locative

(8.1) $BhRm = \beta(v'')$

(9.0) <u>He</u> is lying on <u>the floor</u>.
Positioner Locative

(9.1) $ZhR\ell = \zeta(v'')$

(10.0) <u>The meeting</u> is at <u>eight</u>.
Eventive Temporal

(10.1) $Z\nu Rt = \zeta(j'')$

(11.0) He was working.
Agentive

(11.1) Bh = β(j")

(12.0) She is standing.
Positioner

(12.1) Zh = ζ(v")

(13.0) The curtains disappeared.
Affected

(13.1) ChE[Bm] = κ(v")

(14.0) The wind is blowing.
External Causer

(14.1) Bβ. = β(k")

(15.0) It is raining.
Prop *It*

(15.1) Bβ. = β(k")

(16.0) He threw the ball.
Agentive Affected

(16.1) ChE[Bm] = κ(v")

(17.0) Lightning struck the house.
External Causer Affected

(17.1) NoAm = ν(k")

(18.0)	He	is holding	a knife.			
	Positioner		Affected			

(18.1) $KhE[ThAm] = \chi(v'')$

(19.0)	The stone	broke	the window.			
	Instrument		Affected			
(19.1)	Someone	broke	the window	with	a stone	
	h		m_2		m_1	

(19.2) $ChE[Cm_1\ E[Bm_2]] = \kappa(v'')$

(20.0)	She	has	a car.			
	Recipient		Affected			

(20.1) $ThAm = \tau(h'')$

(21.0)	We	paid	the bus driver.			
	Agentive		Recipient			
(21.1)	We	paid	the bus driver	something.		
	h_1		h_2	m		

(21.2) $Ch_1E[Nh_2Am] = \kappa\ (v'')$

(22.0)	The will	benefits	us all.			
	Instrument		Recipient			
(22.1)	Someone	makes	the will	benefit	us all.	
	h_1		s		h_2	

(22.2) $Kh_1E[Th_2As] = \chi(f'')$

(23.0)	They	climbed	the mountain.			
	Agentive		Locative			
(23.1)	They	climbed	across the mountain.			
	h		ℓ			

(23.2) $NhAR\ell = \nu(v'')$

(24.0) The bus seats thirty.
Locative Affected

(24.1) Thirty people can sit in the bus.
h m

(24.2) $ZhRm = \zeta(v'')$

(25.0) They fought a clean fight.
Agentive Cognate

(25.1) They fought some people.
h_1 h_2

(25.2) $Nh_1Ah_2 = \nu(h'')$

(26.0) I wrote a letter.
Agentive Resultant

(26.1) $ChE[Bs] = \kappa\ (v'')$

(27.0) They had an argument.
Agentive Eventive

(27.1) They argued with some people.
h_1 h_2

(27.2) $Nh_1Ah_2 = \nu(c'')$

(28.0) He nodded his head.
Agentive Instrument

(28.1) He agreed with someone by nodding his head.
h_1 h_2 y

(28.2) $Ch_1E[CyE[Nh_1Ah_2]] = \kappa\ (f'')$

(29.0) He declared her the winner.
Agentive Affected Attribute

(29.1) $Nh_1A[Bh_2] = \nu(j'')$

(30.0) The sun turned it yellow.
External causer Affected Attribute

(30.1) $Cm_1E[Bm_2] = \kappa\ (o'')$

(31.0) The revolver made him afraid.
Instrument Affected Attribute

(31.1) Someone frightened him with a revolver.
h_1 h_2 m

(31.2) $Ch_1E[CmE[Bh_2]] = \kappa\ (v'')$

(32.0) I found it strange.
Recipient Affected Attribute

(32.1) $NhA[Zm] = \nu(f'')$

(33.0) He placed it on the shelf.
Agentive Affected Locative

(33.1) $ChE[Bm_1Rm_2] = \kappa\ (v'')$

(34.0) The storm drove the ship ashore.
External Causer Affected Locative

(34.1) The storm drove the ship ashore.
β m ℓ

(34.2) $C\beta E[BmR\ell] = \kappa\ (k'')$

(35.0) A car knocked it down.
Instrument Affected Locative

(35.1) Someone knocked it down with a car
h m_1 ℓ m_2

(35.2) $ChE[Cm_2E[Bm_1R\ell]] = \kappa\ (v'')$

(36.0) I prefer them on toast.
Recipient Affected Locative

(36.1) $ThA[Zm_1Rm_2] = \tau(f'')$

(37.0) I bought her a gift.
Agentive Recipient Affected

(37.1) Someone sold to me a gift for her.
h_1 h_2 m h_3

(37.2) $Ch_1E[Nh_2A[Bm_1Rh_3]] = \kappa\,(v'')$

(38.0) She gave the door a kick.
Agentive Affected Eventive

(38.1) She kicked the door.

(38.2) $NhAm = \nu(v'')$

(39.0) She knitted me a sweater.
Agentive Recipient Resultant

(39.1) $Ch_1E[BmRh_2] = \kappa\,(v'')$

(40.0) She was singing.
Agent

(40.1) $ChE[Ba] = \kappa\,(v'')$

(41.0) The string broke.
Patient

(41.1) $Bm = \beta(m'')$

(42.0) John sharpened the knife.
Agent Patient

(42.1) $ChE[Bm] = \kappa\,(v'')$

(43.0) The dog is digging a hole.
Agent Result

(43.1) $CzE[B\ell] = \kappa\,(v'')$

(44.0) Harold ran a mile.
Agent Range

(44.1) $BhR\,\ell = \beta(v'')$

(45.0) Susan went to Denmark.
Agent Locative Goal

(45.1) $BhR\ell = \beta(v'')$

(46.0) Yasuko is arriving from Kyoto.
Agent Locative Source

(46.1) $BhR\ell = \beta(v'')$

(47.0) Helen traveled via Samarkand.
Agent Locative Path

(47.1) $BhR\ell = \beta(v'')$

(48.0) She gave the book to Bill.
Agent Patient Goal

(48.1) $Ch_1E[Nh_2Am] = \kappa\,(v'')$

(49.0) I got the cassette from David.
Agent Patient Source

(49.1) David gave the cassette to me.
h_1 m h_2

(49.2) $Ch_1E[Nh_2Am] = \kappa\,(v'')$

(50.0) I contacted Jane via her sister.
Agent Patient Path

(50.1) $[Nh_1A\ h_2]Rh_3$

(51.0) The painting cost £5,000.
Neutral Range

(51.1) $Zm_1Rm_2 = \zeta(f'')$

(52.0) Miranda knew all the answers.
Dative Neutral

(52.1) $ThAs = \tau(c'')$

(53.0) Celia is cold/sad.
Dative

(53.1) $Zh = \zeta(f'')$

(54.0) The child is sleeping.
Neutral

(54.1) $Zh = \zeta(e'')$

(55.0) The town is dirty.
Neutral Attribute

(55.1) $Z\ell = \zeta(f'')$

(56.0) Fiona is the convener.
Neutral Role

(56.1) $Zh_1Rh_2 = \zeta(j'')$

(57.0) Joyce ran.
Agent

(57.1) $Bh = \beta(v'')$

(58.0) Mary found the puppy.
Theme

(58.1) NhAb $= \nu(e'')$

(59.0) It rains in Spain.
Location

(59.1) $B\beta_0R\ell = \beta(k'')$

(60.0) Put the cat on the porch.
Goal

(60.1) You put the cat on the porch.
h z m

(60.2) ChE[BzRm] $= \kappa\,(v'')$

(61.0) He flew from Iowa to Idaho.
Source

(61.1) $[BhR\ell_1]R\ell_2 = \beta(v'')$

(62.0) Jo cuts hair with a razor.
Instrument

(62.1) ChE[CmE[By]] $= \kappa\,(v'')$

(63.0) Helen heard Robert playing the piano.
Experiencer

(63.1) $Nh_1A[Nh_2Am] = \nu(e'')$

(64.0) The wind damaged the roof.
Causative

(64.1) $C\beta_0E[Bm] = \kappa\,(k'')$

(65.0) The tail of the dog wagged furiously.
Possessor

(65.1) The dog wagged its tail furiously.
z y f

(65.2) [CzE[By]]Rf

5.0 DEVELOPING A TABLE OF SEMANTIC PREDICATES

While in Section 3 we realize that elementary semantic predicates are consequential to semantic roles which, in turn, are consequential to the motion-predication correspondence, in Section 4 we come across the following predicate complexifixations:

ΦE[Σ]	(cf. 16, 26, 30, 42, 43, 64)
ΦE[ΦE[Σ]]	(cf. 19, 31, 62)
ΦE [ψA]	(cf. 18, 21, 22, 48, 49)
ΦE [ΣR]	(cf. 33, 34, 39, 60)
ΦE[ΦE[ψA]]	(cf. 28)
ψA[Σ]	(cf. 29, 32)
ΦE[ΦE[ΣR]]	(cf. 35)
ψA[ΣR]	(cf. 36)
ΦE[ψA[Σ]]	(cf. 37)
ψA[ψA]	(cf. 63)

Without analysing an extremely huge corpus of sentences in the hope that, irrespective of their exact number, all other predicates present themselves, I turn to a more efficient instrument for resolving the problem. I am now poised to erect a table to which I will give the name: "The Periodic Table of Semantic Predicates".

Let (1) be Period 1.

(1) 1 [Σ] 2 [ΣR] 3 [ψA] 4 [ΦE]

Let Period 2 be the result of embedding any given predicate[$\mathcal{П}$] featuring in Period 1, thus:

(2) 5 Σ[$\mathcal{П}$] 6 ΣR[$\mathcal{П}$] 7 ψA[$\mathcal{П}$] 8 ΦE[$\mathcal{П}$]

Absolutize, relativize, contactivize, and causativize 5 Σ[$\mathcal{П}$] to obtain Period 3:

(3) 9Σ[Σ[$\mathcal{П}$]] 10 ΣR[Σ[$\mathcal{П}$]] 11 ψA[Σ[$\mathcal{П}$]] 12 ΦE[Σ[$\mathcal{П}$]]

If the cyclic (i.e. periodic) process of absolutization, relativization, contactivization and causativization is consecutively reiterated up to 24 ΦE[ΦE[π]], the Periodic Table of Semantic Predicates emerges.

THE PERIODIC TABLE OF SEMANTIC PREDICATES

	Group I	Group II	Group III	Group IV
Period 1	1[Σ]	2[ΣR]	3[ψA]	4[ΦE]
Period 2	5 Σ [π]	6 ΣR[π]	7ψA[π]	8 ΦE[π]
Period 3	9Σ[Σ[π]]	10ΣR[Σ[π]]	11ψA[Σ[π]]	12ΦE[Σ[π]]
Period 4	13Σ[ΣR[π]]	14ΣR[ΣR[π]]	15ψA[ΣR[π]]	16 ΦE[ΣR[π]]
Period 5	17Σ[ψA[π]]	18ΣR[ψA[π]]	19ψA[ψA[π]]	20ΦE[ψA[π]]
Period 6	21Σ[ΦE[π]]	22ΣR[ΦE[π]]	23ψA[ΦE[π]]	24ΦE[ΦE[π]]
Period 7	25Σ[Σ[Σ[π]]]	26ΣR[Σ[Σ[π]]]	27ψA[Σ[Σ[π]]]	28ΦE[Σ[Σ[π]]]
Period 8	29Σ[ΣR[Σ[π]]]	30ΣR[ΣR[Σ[π]]]	31ψA[ΣR[Σ[π]]]	32ΦE[ΣR[Σ[π]]]
Period 9	33Σ[ψA[Σ[π]]]	34ΣR[ψA[Σ[π]]]	35ψA[ψA[Σ [π]]]	36ΦE[ψA[Σ [π]]]
Period 10	37Σ[ΦE[Σ[π]]]	38ΣR[ΦE[Σ[π]]]	39ψA[ΦE[Σ[π]]]	40ΦE[ΦE[Σ[π]]]
Period 11	41Σ[Σ[ΣR[π]]]	42ΣR[Σ[ΣR[π]]]	43ψA[Σ[ΣR[π]]]	44ΦE[Σ[ΣR[π]]]
Period 12	45Σ[ΣR[ΣR[π]]]	46ΣR[ΣR[ΣR[π]]]	47ψA[ΣR[ΣR[π]]]	48ΦE[ΣR[ΣR[π]]]
Period 13	49Σ[ψA[ΣR[π]]]	50ΣR[ψA[ΣR[π]]]	51ψA[ψA[ΣR[π]]]	52ΦE[ψA[ΣR[π]]]
Period 14	53Σ[ΦE[ΣR[π]]]	54ΣR[ΦE[ΣR[π]]]	55ψA[ΦE[ΣR[π]]]	56ΦE[ΦE[ΣR[π]]]
Period 15	57Σ[Σ[ψA[π]]]	58ΣR[Σ[ψA[π]]]	59ψA[Σ[ψA[π]]]	60ΦE[Σ[ψA[π]]]
Period 16	61Σ[ΣR[ψA[π]]]	62ΣR[ΣR[ψA[π]]]	63ψA[ΣR[ψA[π]]]	64ΦE[ΣR[ψA[π]]]
Period 17	65Σ[ψA[ψA[π]]]	66ΣR[ψA[ψA[π]]]	67ψA[ψA[ψA[π]]]	68ΦE[ψA[ψA[π]]]
Period 18	69Σ[ΦE[ψA[π]]]	70ΣR[ΦE[ψA[π]]]	71ψA[ΦE[ψA[π]]]	72ΦE[ΦE[ψA[π]]]
Period 19	73Σ[Σ[ΦE[π]]]	74ΣR[Σ[ΦE[π]]]	75ψA[Σ[ΦE[π]]]	76ΦE[Σ[ΦE[π]]]
Period 20	77Σ[ΣR[ΦE[π]]]	78ΣR[ΣR[ΦE[π]]]	79ψA[ΣR[ΦE[π]]]	80ΦE[ΣR[ΦE[π]]]
Period 21	81Σ[ψA[ΦE[π]]]	82ΣR[ψA[ΦE[π]]]	83ψA[ψA[ΦE[π]]]	84ΦE[ψA[ΦE[π]]]
Period 22	85Σ[ΦE[ΦE[π]]]	86ΣR[ΦE[ΦE[π]]]	87ψA[ΦE[ΦE[π]]]	88ΦE[ΦE[ΦE[π]]]

The table exhibits Groups 1-IV. The numerals 1, 2, 3, 4, … 85, 86, 87, 88 represent predicate numbers. It is noted that the predicates in the corpus of 65 sentences canonically formalized in Section 4 are locatable as in (4).

(4)	1 [Σ]	2 [ΣR]	3 [ψA]	4 [ΦE]
			7 ψA[π]	8 ΦE[π]
				20 ΦE[ψA[π]]
				24 ΦE[ΦE[π]]

If in a group L = last predicate, F = first predicate, N = period number, then

(5) $L = F + 4(N-1)$

where $1 \leq N \leq 22$.

Furthermore, if r = embedded predicate and n = period number, then

(6) $r = n+2$ where $3 \leq n \leq 22$.

6.0 CONCLUSION

In this concluding Section of the paper I wish to retrace the train of thought leading to the present Periodic Table of Semantic Predicates. But before returning to the conceptual roots of the Periodic Table I would pose the question: "What does the immediate future hold for the Periodic Table itself"? Hereto I advance two hypotheses. First, the Periodic Table captures all predicates in all acousto - and optolanguages. Second, the Periodic Table foreshadows a clear break with Rogetian and Ballmerian methods of taxonomizing the lexicon (or parts thereof) of a language.

The Periodic Table has the predicate as its central notion. The assumption that a predicate is constituted by semantic roles is essential to the Periodic Table. The exact identification of semantic roles is based on the motion-predication correspondence. But what causes, if at all I be justified to think in causal terms, the motion-predicate correspondence? I hypothesize that the mind causes the motion-predication correspondence by simulating mechanical forces which obey Newton's Laws of Motion. Whereas the typology of arguments suggested in this paper is likely to be a contentious issue, the inconceivability of existence of any other types of motion and, correspondingly, predication other than the absolute, relative, contactive and causative ones confers an indefeasible power of identifying semantic roles. And it is the identification of semantic roles that has given the impetus to the writing of this paper.

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