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## **Catalyzing and Measuring the New Human: The New Human University, Homeostatic Hierarchical Integration and Developmental Electroencephalography**

### **Abstract:**

This article is compartmentalized into three main sections. An introductory chapter at first presents critical concerns about measurement and afterwards invites the reader to become acquainted with the New Human University. The New Human University is a newly found integrally oriented educational institution and community applying advanced meta-modern curricula and practices developed by Dr. Michael Cotton and his colleagues. This section is followed by a theoretical overview of a model based on both Hierarchical Complexity and Ego-Development theory. The ontogeny and the taxonomy of this model are presented and extensively and exemplarily applied to different contexts. This is meant to allow a transparent and complete understanding of the so-called Model of Homeostatic Hierarchical Integration through Communicative Action. The third and final part is an application of Homeostatic Hierarchical Integration towards the Washington University Sentence Completion test originally developed by Jane Loevinger and Ruth Wessler in the 1970s. By this a New Human Inventory was developed and statistically tested for internal consistency. This, too, served to theoretically expand the practice of assessing Centers of Gravity through Total Protocol Ratings with a sentence completion test. This practical section is concluded by a Quantitative Electroencephalographic study informed and guided by the developmental assessments of students at the New Human University. This section comprises then a discussion of findings at the Gamma-band brainwave spectrum and an outlook into future directions of research and catalyzing human and societal evolution.

<b>1. INTRODUCTION: PURPOSE OF THIS PAPER .....</b>	<b>4</b>
1.1. THE FOUNDATIONS OF THE NEW HUMAN UNIVERSITY.....	4
1.1.1. <i>The curriculum and methods:</i> .....	6
1.1.1.1. Pillar One: Integral Metatheory .....	6
1.1.1.2. Pillar Two: Source Code Mediation and the 9 Summits .....	6
1.1.1.3. Pillar Three: Unitary Evolutionary Enlightenment .....	7
1.2. MEASURING THE NEW HUMAN: THE PLAN .....	8
<b>2. THEORY: HOMEOSTATIC HIERARCHICAL INTEGRATION AND EGO-DEVELOPMENT.....</b>	<b>12</b>
2.1. THE FOUR CAUSES OF HOMEOSTATIC HIERARCHICAL INTEGRATION AND THE EGO.....	12
2.1.1. <i>Communication as the Efficient Cause of Development</i> .....	12
2.1.2. <i>Components of Homeostatic Hierarchical Integration</i> .....	14
2.1.3. <i>Genuine and Degenerate Wholeness</i> .....	15
2.1.4. <i>Generalized Media and the Material and Formal Causes</i> .....	19
2.1.5. <i>Homeostasis and the Ego</i> .....	23
2.2. STRUCTURES AND FUNCTIONS: THE METRIC OF HOMEOSTATIC HIERARCHICAL INTEGRATION .....	30
2.2.1. <i>Themes and Tiers</i> .....	36
2.2.2. <i>Rhemes and Stages</i> .....	46
2.2.2.1. The Monothematic Stages of Firstness .....	51
2.2.2.2. The Dithematic Stages of Secondness.....	53
2.2.2.3. The Trithematic Stages of Thirdness .....	59
2.2.2.4. The Quatrothematic Stages of Fourthness .....	66
2.2.3. <i>Syntax and Phases</i> .....	73
2.2.3.1. Syntactical Architecture of the Four Phases .....	77
2.2.3.2. Exemplary Assessments of Phase .....	79
2.2.4. <i>Types, Stages and Syntax</i> .....	83
2.2.5. <i>Structure of the Whole</i> .....	89
2.2.6. <i>Assessment through Metric and Manual</i> .....	93
<b>3. PRAXIS: THE NEW HUMAN UNIVERSITY STUDY .....</b>	<b>97</b>
3.1. ASSESSMENT OF NHU POPULATION .....	97
3.1.1. <i>The New Human Inventory and Cronbach`s Alpha</i> .....	99
3.1.2. <i>Sacred We-Space and Stage Distribution at the New Human University</i> .....	101
3.1.3. <i>Rethinking Horizontal Decalage and the OGIVE Rule</i> .....	104
3.2. LORETA CORRELATES OF DEVELOPMENT .....	107
3.2.1. <i>Methods: Participants, Equipment, and Scoring</i> .....	107
3.2.2. <i>Results of the Developmental Electroencephalography</i> .....	108
3.2.3. <i>Discussion and Future Perspectives</i> .....	111
<b>4. RESOURCES:.....</b>	<b>116</b>

## Figures

FIGURE 1: COMPARISON OF MODELS APPLIED PART ONE .....	10
FIGURE 2: COMPARISON OF MODELS APPLIED PART TWO .....	11
FIGURE 3: THE CAUSATIVE SCHEME OF HOMEOSTATIC HIERARCHICAL INTEGRATION THROUGH .....	23
FIGURE 4: THE FOUR TRANSCENDENTALLY GENERALIZED MEDIA OF THE HOMEOSTATIC HIERARCHICAL INTEGRATION .....	30
FIGURE 5: THE SCORING METRIC GENERATED BY THE MODEL OF HOMEOSTATIC HIERARCHICAL INTEGRATION .....	35
FIGURE 6: VERTICAL AND HORIZONTAL DIMENSIONS OF AN ASSESSMENT AND MORAL ASPECTS FROM SPEECH ACT THEORY .....	45
FIGURE 7: THE STRUCTURES AND FUNCTIONS OF THE FOUR HOMEOSTATIC TIERS.....	46
FIGURE 8: THE FOUR RHEMES OF FIRSTNESS AND THE ARISING OF MONOTHEMATIC EXPRESSIONS .....	53
FIGURE 9: TRIADIC STRUCTURE AT THE THIRD STAGE OF SECONDNESS IN TRIBAL MYTHEMES.....	55
FIGURE 10: THE FOUR THEMES OF SECONDNESS AND THE ARISING OF DITHEMATIC EXPRESSIONS .....	58
FIGURE 11: THE FOUR THEMES OF THIRDNESS AND THE ARISING OF TRITHEMATIC EXPRESSIONS .....	66
FIGURE 12: THE FOUR THEMES OF FOURTHNESS AND THE ARISING OF QUATROTHEMATIC EXPRESSIONS .....	72
FIGURE 13: THE FRACTAL STRUCTURE OF STAGES AND PHASES WITHIN EACH STAGE .....	73
FIGURE 14: DIFFERENT TYPES OF DATIVE BASED ON HASPELMATH'S (2003) GEOMETRY OF GRAMMATICAL MEANING .....	82
FIGURE 15: SCHEMATIZATION OF TWO TYPES OF FOURTHNESS.....	89
FIGURE 16: THE STRUCTURE OF ASSESSING EPOCHS WITH THE METRIC OF HOMEOSTATIC HIERARCHICAL INTEGRATION .....	98
FIGURE 17: SNIPPET FROM THE OUTPUT-FORM OF THE NEW HUMAN INVENTORY .....	99
FIGURE 18: COMPARISON OF THE HEW HUMAN STUDY WITH GENERAL POPULATION AND UK MANAGERS.....	103
FIGURE 19: DISTRIBUTION OF RATED STEMS THROUGH FOUR QUARTERS .....	105
FIGURE 20: THE TEMPORAL GYRI AND THE INSULAR CORTEX.....	109

## Tables

TABLE 1: THE 9 SUMMITS OF TRANSFORMATION (COTTON 2020).....	7
TABLE 2: THE FOUR PHASES WITHIN EACH STAGE AND THEIR SYMBOLIC-SYNTACTICAL FIELD .....	79
TABLE 3: THE FOUR PHASES WITHIN THE TRITHEMATIC-DIRHEMATIC ACHIEVER STAGE OF EGO-DEVELOPMENT .....	81
TABLE 4: SYNTACTICAL COMPARISON OF RESPONSES ON THE HEINZ DILEMMA WITH HOMEOSTATIC INTEGRATION .....	83
TABLE 5: EXCERPT FROM THE REVISITED SCORING MANUAL FOR ITEM 19 "CRIME AND DELINQUENCY" .....	95
TABLE 6: DISSECTING A DITHEMATIC-TRIRHEMATIC 2.3 STAGE OUT OF THE OPPORTUNIST AND DIPLOMAT LEVELS.....	96
TABLE 7: SPLIT-HALF PROTOCOL WITH ORIGINAL AND NEW HUMAN SENTENCE STEMS.....	100
TABLE 8: SPLIT-HALF INTERNAL CONSISTENCE OF THE EGO-LEVEL BETWEEN ORIGINAL AND NEW HUMAN STEMS .....	101
TABLE 9: EXEMPLARY APPLICATION OF A DIALECTICAL MODEL OF STAGE TRANSITION .....	107
TABLE 10: SHARED VARIANCE FOR MIDDLE AND INFERIOR TEMPORAL GYRUS AND INSULA AREA AT 40HZ .....	110
TABLE 11: PERCENT DIFFERENCES BETWEEN THE STAGE GROUPS AT THE NHU .....	111
TABLE 12: CHANGE IN GAMMABAND ACTIVITY DUE TO A CONTEMPLATIVE PRECURSOR-PRAXIS OF SUMMIT ONE .....	115

## 1. Introduction: Purpose of this Paper

Like Zachary Stein (2019, p.178) writes in a collection of essays called *Education in a time Between Worlds*: "measures are intrinsically related to power. Measures create realities by structuring thought and decision-making. Measures make science by dictating what counts as official knowledge". This paper is, based on a cooperation between The New Human University and the developer of the Model of Homeostatic Hierarchical Integration through Communicative Action, offering both an educational conception to create a new human and new metrics and measures that are part of a deconstructive process in the Derridean (2007, p.23) sense: a process which not only works on the dissolution and destruction of the outdated, but "involves an affirmation, this latter being linked to the coming – the venire – in event, advent and invention". Hence, this article is in the best sense of the word meant to be an "aspect of invention, of inventive power: as if it were necessary [...] to reinvent the future" (ibid. p.23).

When we, in the following, offer deep insights into our models and metrics as a reflection of the plurality that our human consciousnesses and cultures produce, we include a large mix of methods: reconstructive, archeological, comparative, psychological and neuroscientific as well as others that span the innovative representation of developing and typological interiority, physiology and society within a seamless whole. But independent of these means our end is to generally generate large scale positive social and cultural shifts. Henceforth we chose in a communitarian scientific ethos to transparently share as much knowledge as possible. We not only want to empower the replication of our methods and findings and allow close scrutiny but dare to participate in the democratization of the educational and scientific landscape. As integralists, our purpose is to be part of the development of an integral science and "metrolgical pluralism [that] can yield a constellational unity in diversity – a representation of uniqueness" (Stein 2019, p.182) that feeds back into wiser and riper methods of learning and education and concomitantly a well-matured humanity.

### 1.1. The Foundations of the New Human University

Clare W. Graves (1974, p.72) in his groundbreaking and prophetic article about *Human Nature Preparing for a Momentous Leap* writes that "man is learning that values and ways of living which once were good for him at one period in his development are no longer good because of the changed condition of his existence". He then proposes a hallmark of development: the movement from subsistence levels of existence towards the first level of being were man becomes able "to stabilize the essential functions of interdependent life" (ibid. p.73). In integral metatheory we then speak of the integral view. It is a perspective, expressed by the stages teal and turquoise, which is "truly holistic, not in New Age woo-woo sense, but be-

cause it sees itself as part of a deeply interwoven and interconnected and conscious Kosmos”, so Ken Wilber (2017, p.207) in the Religion of Tomorrow.

In this sense *The New Human University* (The NHU) is an educational institution and community that promotes the advancement of those latent, inner organic technologies that are activating the higher human brain, creating new physiology and expressing new DNA, that then manifests as higher stages of consciousness within peoples` interior. The ultimate objective of The New Human University is to promote vertical evolution of consciousness into new life altitudes and spark a revolution which will end in a rebirth of the species as the new human. Foundational therefore is a rediscovery of Graves (1974) recognition. Namely, that what integralists call the green meme certainly made an impact on our ability to see the world from a wider lens, and to appreciate other cultures and the uniqueness in each of us. As much as it taught us how to think and talk about higher consciousness, enlightenment and liberation. But the promise of a ‘New Age’ can only be completed at what Dr. Michal Cotton (2018) calls *Epoch 6* – the integral view. In his book about *Hacking Evolution through Higher Brain Activation* Dr. Cotton (2018, p.142) describes the entrance into that newly emerging stage of human potential as the place “where the Authentic Self becomes the vehicle of the soul’s journey in the world of space and time and matter and manifestation and your soul is enriched by this journey”. Once we have glimpsed that absolute freedom where one deeply knows one’s soul “one allows the heart to open for the entire world” (ibid. p.142).

From this place the previously known new age approaches seem profoundly underwhelming as we face the urgent need to genuinely and radically transform ourselves, and live at a new, vertically elevated developmental space to confront the urgent problems humanity is facing now. Or as the integral activist and co-author of integral life practice Terry Patten (2018, p.216) writes in *a New Republic of the Heart*: “Our challenges call us to a politics of human maturity. This is the revolutionary ‘turning’ in which wholeness reasserts its primacy over fragmentation and regression”. There our most essential political priority is “cultivating, eliciting, and exercising more maturity and wisdom – so it can shape our lives and relationships, and then our public decision making” (ibid. p.216).

Therefore, one main parts of the transformational experience at The NHU is the idea of sacred we-space, a community setting, that “as some members are first experiencing this higher altitudes and more advanced physiology, their heightened and coherent energy output pulls others into this advanced field and further catalyzes growth” (Cotton 2018, p.152). Therefore, the New Human University is a path of destiny, revolution, rebirth, and history in the making

that is looking at both: The New Human and The New Human Community that ripples out and leads our world towards the light of an integral perception.

#### 1.1.1. The curriculum and methods:

The NHU utilizes a three-pillared approach to attain these objectives: first an orientation within the framework of *Integral Metatheory*, the bio-psycho active map of reality developed by Ken Wilber (2000a); second *Source Code Meditation* and the *Nine Summits of Transformation*, as the technology and praxis; and third, the *Live Unique Evolutionary Enlightenment*, the experience of a new enlightenment in sacred we-space.

##### 1.1.1.1. Pillar One: Integral Metatheory

The major local and global transformations we face “suggest integral design requirements for educational technologies in general”, so Zach Stein (2019, p.105), since “integral meta-theory of education contrasts with the fragmentation and biases of so many curricula”. But not only does the NHU utilize Integral Metatheory for its curriculum design but since it is a theory of everything and by this is made to be bio-psycho active – “it has a direct and powerful capacity to activate and accelerate one’s own growth and development [...] across all of its major dimension” (Wilber 2017, p.47 & p.526) – it is part of the curriculum itself. It is a framework that is the result of looking carefully at the enduring truths and consistent patterns within all the ways we see and make sense of our philosophy, spirituality, healing, and indeed all of reality. We consider it as “integral”, leaving nothing out, and yet never prioritizing partial truths – be they healing systems, religions or meditation techniques for that matter – at the expense of the greater whole.

##### 1.1.1.2. Pillar Two: Source Code Mediation and the 9 Summits

*Source Code Meditation* as a new integral technology is described by Terry Patten, the already mentioned integral philosopher and co-author of Ken Wilber, as “able to set in motion a natural salutogenic cycle. This is an entirely natural but elusive process, similar in some respects to intense pranayama and kundalini yoga, but also distinct. It doesn’t force the nervous system into expanded states, but instead allows the circulation of breath and energy to organically generate a balanced and sustainable expansion of the flow of energy and awareness”. Michael Cotton (2019) describes in the *Science of the Energy of Transformation and its Pathways* how Source Code Meditation helps “the energy of our soul and spirit, gently finding its way to our higher brain structures to awaken us into higher consciousness, so that we can turn that consciousness back on the very catalytic process that awakened it, and promote more energy to the brain and bring that to the world and co-create heaven on earth”. It for this reason leads in its first step to a *salutogenic breath expansion* that is “experienced as though

every part of your being is breathing in all directions simultaneously, like bellows filling with air, seeming to defy the physical limitations of how much air the lungs can actually hold” (Cotton 2018, p.57) before it moves into a *salutogenic breath-rhythm*. This second step and naturally cycling and organized movement that is automatically generated by the brain completes itself in a *salutogenic autowave*. An autowave is a way by which living systems transmit information throughout themselves and similarly the salutogenic version is a phase transition “experienced as the undulation of raw energy moving up and down the energy pathways” (ibid. p.58).

Source Code Meditation is meant to increase brain metabolism and use that energy then to tune the brain areas essential to efficiently receive the meditation that follows. It lays a foundation that contrary to traditional meditation approaches, which require us to “put the cart before the horse” by directing our focus inwards, prepares and tunes the anatomical foundation for meditation first. It is a brain first method. Source Code Meditation, too, provides the advanced states from which to progress through the *9 Summits of Transformation*. These summits help to experience a fully liberated state of being and an evolutionary state of becoming as we fully engage the life process. Each summit is directed towards a certain area of life and the corresponding potentials for human growth and evolution. Table 1 gives an overview of the summits and their intended outcomes.

<p><i>Summit One:</i> <b>Soul Awakening</b></p> <p>You learn to have a relationship to objects – your body, mind, and emotions – without being bound to them.</p>	<p><i>Summit Two:</i> <b>Transcendent Awakening</b></p> <p>You discover your Transcendent Self, the Eternal Immortal Witness that is beyond space and time. It was never born and will never die.</p>	<p><i>Summit Three:</i> <b>Unitary Awakening</b></p> <p>You bring the Ultimate Subject to all Objects, the Transcendent Self, in a non-dual dynamic with all it sees, i.e. into an indivisible Whole.</p>
<p><i>Summit Four:</i> <b>Your Authentic Self &amp; your Soul’s Purpose</b></p> <p>Your Authentic Self is the Vehicle of your Soul in space and time. And your Soul has a Purpose for being here now in space and time.</p>	<p><i>Summit Five:</i> <b>Look Up: Promoting the Vertical Trajectory of the Authentic Self</b></p> <p>We plan our Emergence and Ascension into the 6<sup>th</sup> Epoch of Human Evolution and create the physiology that will get us there.</p>	<p><i>Summit Six:</i> <b>Look Down: Reclaiming the Spiral of Development</b></p> <p>We need to transcend and include each stage of development in a healthy way. You learn how to heal within and repair the Spiral.</p>
<p><i>Summit Seven:</i> <b>Illuminate, Liberate &amp; Transmutate the Shadow</b></p> <p>By releasing shadow energy into SalutoGenesis, we can re-purpose the shadow as fuel for our Higher Brain and for our Soul’s Purpose.</p>	<p><i>Summit Eight:</i> <b>Our Life Codes</b></p> <p>It is time to take action to create evolution in all Four Quadrants. What are the actions required to give you the life you desire?</p>	<p><i>Summit Nine:</i> <b>Unitary Evolutionary Enlightenment</b></p> <p>You adopt an Epoch 6 Thrivestyle that is based on the SalutoGenic response as the primary detector of Truth, Beauty and Goodness.</p>

Table 1: *The 9 Summits of Transformation (Cotton 2020)*

### 1.1.1.3. Pillar Three: Unitary Evolutionary Enlightenment

An entire live and in person week is devoted to summit nine *the Unitary Evolutionary Enlightenment experience* through advanced Source Code Mediation techniques. The unitary

evolutionary enlightenment is an awakening experience during which, according to Cotton (2018, p.213), “you recognize your evolving nature and begin to unfold and expand. The ‘light of consciousness’ pours into form as the transcendent self – and your experience of the world no longer feels separate. You become a cocreator one with the evolving cosmos”. This practice is then embedded into the already mentioned concept of *sacred we-space*. As Olen Gunnlaugson and Michael Brabant (2016, p.117) write in the introduction to *Cohering the Integral We Space*, “the term we-space, we-field, we-practice, higher or deeper intersubjectivity and other we-signifiers denote this growing recognition of the shared inner dimensions of our field of relating from an intersubjective position”.

Within the NHU coming together into this practice of a completely new form of enlightenment experience brings forth a Unique Evolutionary Spirituality that seeks to enlighten, evolve, and engage the life process as separate individuals as well as in community. As this spirituality goes beyond the “Great-Grandfather-in-the-Sky” religions, beyond the atheism of modernity, and beyond superficiality of post-modern spiritual approaches it provides a profound spiritual message. It moves against “the radical dislocation of identity [...], an existential nomadism of the abstract individual” (Stein 2019, p.102f), generated through learning approaches that drop real life meetings. And thus, supposedly is a we-space community that knows themselves as the transcendent self, an impersonal absolute reality of being consciousness and bliss, while simultaneously each member of the community expresses their unique, personal signature into the relative world of form and spacetime. As Gunnlaugson and Brabant (2016, p.134) write, we-space practice in fact allows “individuals and groups an experiential reference point to move beyond the limited horizons of the separate, conditioned self or egoic consciousness”.

## 1.2. Measuring the New Human: The Plan

This lengthy article is besides this introduction divided into two main sections. The major reading part is a first explanation of the *Model of Homeostatic Hierarchical Integration through Communicative Action*. The second of these sections, part 3 *Praxis: The New Human University Study* as the title goes, provides the practical application of homeostatic integration towards the NHU as well as the outcomes and discussion of *Low-Resolution Brain Electromagnetic Tomography* (LORETA) of the developmentally clustered NHU population.

There are several ways to proceed through this article. Since we use the language of several well-known models the neurologically interested person can start out at the end of this paper with header 3.2 *LORETA Correlates of Development* while someone additionally interested in the assessment of NHU Students can start at the beginning of chapter 3 *Praxis: The New*

Human University Study. If generally interested in the application of hierarchical complexity and hierarchical integration-based domain general assessment methods towards Jane Loevinger's and Ruth Wessler's (1970) *Sentence Completion Test* one can selectively read 2.1.5 *Homeostasis and the Ego* as well as 2.2.6 *Assessment through Metric and Manual*. Someone who is only interested in stage descriptions and how to detect their hierarchical integration and complexity can restrict him- or herself towards sighting the article from 2.2 *Structures and Functions: The Metric of Homeostatic Hierarchical Integration* unto 2.2.2.4 *The Quatrothematic Stages of Fourthness* whereas someone interested in the ontogeny of stage models, the interdependence of mature models of being human and the dynamics of development can read the whole 2.1 *The Four Causes of Homeostatic Hierarchical Integration* section. People interested in the interplay of typology and stage assessment can choose to read 2.2.4 *Types, Stages and Syntax* while people interested in the concepts of wholeness and pathology can look at 2.2.5 *Structure of the Whole* and follow the cross-references in those chapters. However, we recommend enjoying the whole journey.

This article by this is meant to be the first one in a series. The comprehensiveness is owed to the fact that for this we have to create a knowledge basis as well as that only by this we can provide full transparency over critical assumptions, hypotheses and measures and allow their critical review and hopefully validation. The follow up articles will depict the progress of NHU students through levels of hierarchical integration and the outcomes of that development discernable through LORETA brain imaging. Further studies will additionally include contextualization of electroencephalographic data through the interplay of developmental stages with Ralph W. Hood's (1975) *Mystical Experience Scale* as well as reciprocal effects between self-assessments through Ed Diener's and colleagues' (2009) *Flourishing Scale* and developmental progress.



	<b>Angerer</b> Homeostatic Integration	<b>Piaget &amp; Inhelder</b> Logical Thinking	<b>Mahler</b> Psychological Birth	<b>Ingram</b> Linguistic Stages	<b>Kohlberg, Apel &amp; Habermas</b> Sociology of Morals	<b>Fowler</b> Stages of Faith	
Firstness: Physical Beings	1.1.	1 <sup>st</sup> Qtr.	1 Use of Reflexes	Normal Autistic Phase	1. <i>Prelinguistic Communication</i> : Gestures, Crying and Syllables	Undifferentiated	
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.	2 Primary Circular Reaction	Normal Symbiotic Phase			
		4 <sup>th</sup> Qtr.					
	1.2.	1 <sup>st</sup> Qtr.	3 Secondary Circular Reactions	Differentiation			2 <sup>nd</sup> Subphase
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
	1.3.	1 <sup>st</sup> Qtr.	4 Coordination of Secondary Schemata	Practicing			3 <sup>rd</sup> Subphase
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.	5 Discovery of New Means through Experimentation	Rapprochement			2. <i>Holophrastic Stage</i> : One Word Utterances
		4 <sup>th</sup> Qtr.					
	1.4.	1 <sup>st</sup> Qtr.	6 Invention of New Means through Mental Combinations	Object Constancy			3. <i>Telegraphic Stage</i> : Simple Well-Formed Sentences
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
Secondness: Vital Essences	2.1.	1 <sup>st</sup> Qtr.	IA Preconceptual	4. <i>Early Complex Sentences</i> : Complements on Verbs and Relative Clause	Pre-conventional	Intuitive-Projective	
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
	2.2.	1 <sup>st</sup> Qtr.	IB Preoperational	5. <i>Complex Sentences</i> : Rules to Embed Sentences into Another	Stage 1 : Obedience & Punishment		
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
	2.3.	1 <sup>st</sup> Qtr.	IIA Concrete Operational	6. <i>Linguistic Intuitions</i> : Reflection upon Grammar	Stage 1/2	Mythic Literal	
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
	2.4.	1 <sup>st</sup> Qtr.	IIIA Formal Operational		Stage 2 : Individualism and Exchange		
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
Thirdness: Mental Ideas	3.1.	1 <sup>st</sup> Qtr.			Conventional	Synthetic-Conventional	
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
	3.2.	1 <sup>st</sup> Qtr.					Individual-Reflective
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
	3.3.	1 <sup>st</sup> Qtr.					Conjunctive
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
	3.4.	1 <sup>st</sup> Qtr.					Universalizing
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
Fourthness: Absolute Spirits	4.1.	1 <sup>st</sup> Qtr.					
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
	4.2.	1 <sup>st</sup> Qtr.					
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
	4.3.	1 <sup>st</sup> Qtr.					
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					
	4.4.	1 <sup>st</sup> Qtr.					
		2 <sup>nd</sup> Qtr.					
		3 <sup>rd</sup> Qtr.					
		4 <sup>th</sup> Qtr.					

Figure 2: Comparison of Models Applied Part Two

## 2. Theory: Homeostatic Hierarchical Integration and Ego-Development

One of the challenges each developmental model faces is to not only describe a sequence of stages but, too, to offer a theoretical framework that makes comprehensible why and how stage development takes place. In this Section we first offer a description of the basic assumptions of a somewhat neo-Aristotelian model (including Aristotle's four causes and the distinction between matter and form) that especially draws on the language of the German sociologist and cybernetic systems-thinker Niklas Luhmann as well as other cybernetic models plus Kantian transcendentalism, Peirce- an Post-Peircean pragmatism and Hegelian idealism. The model combines four times four four-phased-stages as so-called tiers into a homeostatic framework, where each series of fours is consisting "of a particular mode or quality of action or thought" (Mascolo & Fischer 2010, p.156). The first half of this section will depict the model itself and its relationship to theories of hierarchical complexity as well as Jane Loevinger's (1976) *Ego-Development*. The second half then will, based on several scoring examples and correlations with other models and metrics, outline the taxonomy and assessment procedure of our model and its seamless integration of the ego-development framework as a meaning- and useful surface expression of the model presented. Figure 1 and Figure 2 on the earlier two pages give an overview of our model's stages and how they correlate with various other models used in the following sections to make it become alive. This includes Michael Cottons (2018) conception of six succeeding epochs of human and cultural development on which the teachings at the New Human University are built on.

### 2.1. The Four Causes of Homeostatic Hierarchical Integration and the Ego

Jean Piaget and Bärbel Inhelder (2000, p.157) write in the concluding section of *the Psychology of the Child* that development is "a process of equilibrium, [...] in the sense of self-regulation; that is a series of active compensations on the part of the subject in response to external disturbances and an adjustment that is both retroactive and anticipatory, constituting a permanent system of compensations". The here offered model picks up this idea and puts it into a closed and comprehensive system of homeostatic hierarchical integration through communication as self-thematization, self-enactment and ultimately self-maintenance.

#### 2.1.1. Communication as the Efficient Cause of Development

Communication means with Humberto Maturana (1978, p.131) "either to design a system with emitter and receiver components [...], such that for every distinguishable state produced in the emitter a single distinguishable state is generated in the receiver, or to treat a preexisting system as if it operated like this". Within this we simply transcend the distinction between action and communication and treat any intentional human behavior as directed towards actu-

alizing a certain potential through a process of selection, which “singles out something from a relevant horizon of references, which is constituted by itself, and leaves beside something else” (Luhmann 2012, p.194), so that a previously defined and desired state is generated in the environment and retroactively in the self: which simply is communication in which the environment becomes the receiver of our emissions. Only if the reaction of the environment is perceived as homomorphic to one’s expectations, communication is experienced as successful, which means it maintains homeostasis: it keeps “the essential variables [of a human] within physiological limits” (Ashby 1960, p.58) that have been predefined by earlier expectations.

In this context development is supposed to happen when communication with the environment can no longer be sustained through one’s given complexity. Development thus is understood as a similar mechanism as fever. While fever helps to keep an organism alive by raising temperature, development occurs to resolve the problems of communicative homeostasis, created by the earlier stage’s behavior, through raising its level – given that the foundations for growth are cemented. Therefore, comparable to Clare Graves’s (2006, p.160) *Emergent Cyclical Levels of Existence Theory* (ECLET) humans face “the living problems created by being a member of the species *Homo sapiens*, a member of a group, or an individual living in certain and not other conditions for existence” where “higher order dynamic coping systems” (ibid. p.164) emerge that “contain [...] different equipment which is specifically structured to sense and cope with each set of new and different life problems” (ibid. p.164).

However, in contrast to Grave’s assumption that development is an open-ended process – an assumption implicit in Michael Lampion Commons’s (et al. 1998, p.270) *Model of Hierarchical Complexity*, too, where “the number of times the mechanism [of hierarchical complexity and stage growth] can be applied is infinite” – the idea of a homeostatic hierarchical integration through communication assumes a stage sequence that is finite. Development is seen as the iterative completion of a single homeostatic system through a fixed sequence of steps or developmental stages. These stages are supposedly restricted by genetic properties of the human brain. The option for further stages beyond our phylogenetic and human restrictions is “part of the irreducible mystery of spirit’s own evolution” (Wilber 2017, p.241).

Communication in its search for homeostasis thus is not only a Foucaultian (2005, p.421) function of both existence and non-existence and if its “arrangements were to disappear as they appeared [...] [an existing form would] be erased, like a face drawn in sand at the edge of the sea” but they are in Aristotelian terms the *efficient cause* of development. Communication is that from which “change or consistence have their very beginning, [...] the original source of the originated, the changing cause of the changed” (Aristotle 2019, 1013a).

### 2.1.2. Components of Homeostatic Hierarchical Integration

According to W. Ross Ashby (1960, p.148) in *Design for a Brain* “the Homeostat is, of course, grossly different from the brain in many respects, one of the most obvious being that while the brain has a very great number of component parts the Homeostat has, effectively, only four”. The newly developed model, however, restricts itself exactly to four variables but sees them constructed of a possible infinitude of components which then respectively are structured within or by these four main segments.

The four segments are named in accordance with Niklas Luhmann’s (2012, 2017, 2018a & 2018b) variation of Talcott Parsons’s (1991) components of *the Social System*; namely: Adaptation, Differentiation, Integration and Self-Thematization (Angerer 2020). However, they do show up in a multitude of conceptions and can be seen as an equivalent to Jean Piaget’s and Bärbel Inhelder’s (1958, p.144) “group of four interpropositional transformations”: identity or the direct transformation, negation or inverse transformation, reversibility or reciprocal transformation and correlative transformation “or inversion of the reciprocal [...] which is equivalent to a simultaneous assertion” (ibid. p.147).

One of the ways we look at these four functions is through a Hegelian lens. This means, we assert them as dialectics in its quadruplicate form or as Georg Wilhelm Friedrich Hegel (2010, p.746) writes in the *Science of Logic*: “the term counted as third can also be counted as fourth, and instead of a triplicity, the abstract form [of dialectics out of thesis, antithesis and synthesis] may also be taken to be a quadruplicity; in this way the negative or the difference is counted as a duality”.

The *adaptive* function thus is a form of identity with a certain environment and a thesis. It is dependent on what is in both “the subject and the object identical” (Hegel 2011, §415). With the *differentiation* a system or the self can start to introduce both causality and either-or choices, it “directs its inner destination and purpose on an externally found objectivity” (ibid. §483). With this function, namely a negation or inversion, the homeostatic system can direct itself towards goals and become agentic as it generates the “meaningful unity of a difference between system and environment” (Luhmann 2012, p.283): the Spinozean principle that all determination is negation, so to say. The function of *integration* establishes for a self “a kind of ‘compromise’ between the ‘strains to consistency’ of its personality [...] [and environment] in such a way that no one of them closely approaches ‘perfect’ integration” (Parsons 1991, p.10). It shifts the focus of a system towards a reciprocation that, in Piaget’s and Inhelder’s (2000, p.137) words, “is a form of reversibility which characterizes relational groupings, but it also has its source in early behavior patterns of a symmetrical nature”.

The last function of *self-thematization* serves the maintenance and change of communications within a system. As a form of autopoiesis it is both self-constitution and self-reference in differentiation towards an environment. It is meant to sustain the system by upholding integration, “their determinability, hence their compatibility for further operations” (Luhmann 2012, p.59), and goal-orientation through creating differences towards other systems “as a surplus of references towards other possibilities” (ibid. p.95). Self-thematization thus is closely linked to characteristics of Piaget’s correlative transformation at the formal operational stage, which can combine both the inversive transformation or negation and the reciprocal transformation or reversibility, which are “not integrated into a single system” (Piaget & Inhelder 1958, p.175) at the preceding concrete operational stage. The fourth operation therefore is “an operatory fusion into a whole” (Piaget & Inhelder 2000, p.138).

### 2.1.3. Genuine and Degenerate Wholeness

However, the self in its hierarchical complexity or integration of new modes of communicative homeostasis that are hierarchically more complex than earlier ones is per definition always already a whole. Or as Konrad Lorenz (1996, p.139) states in *the Natural Science of the Human Species*: Organisms incorporate “a harmony” that is self-maintaining. As Entities they are “regulatory systems of universal, reciprocal causal connections [...] with transposability as a characteristic that is an intrinsic, constitutive property of every organic systemic entity” (p.137f). That means, that all the elements involved in the construction of the homeostatic hierarchical integration are “of course, continually changing” (p.139). But they do this on behalf of and in realizing a pre-given gestalt. Speaking with Aristotle, “they have a final cause” (Aristotle 2019, 1013a) or purpose. Though they have freedom “everything is organized towards one thing [...], mutually interconnected contributing to the whole” (ibid. 1075a) – the egg becomes a caterpillar, which after cocooning rises as butterfly.

To understand this idea of finality we use a concept of the American pragmatist philosopher Charles Sanders Peirce (1998). In *the Essential Peirce*, a collection of his lectures and letters, he outlines three elementary categories. As we will show later, those basically correlate with adaptation, differentiation and integration, but are simply called firstness, secondness and thirdness with *firstness* as “a Quality of Feeling” (Peirce 1998, p.160) and *secondness* as “that which is such as it is as being Second to some First, regardless of anything else [...] that is to say, it is Reaction [or Agent] as an element of the Phenomenon” (ibid. p.160) that creates a relational logic. *Thirdness* successively is “the Idea of that which is such as it is as being a Third, or Medium, between a Second and its First. That is to say, it is Representation as an element of the Phenomenon” (Peirce 1998, p.160).

Of ultimate concern for understanding his categories properly is, according to him, to see “the distinction between the Genuine and the Degenerate” (Peirce 1998, p.172) expression of each category. Degenerate is a mathematical term for an object which has, in some sense, “collapsed” into something simpler. Thus, a dot is a degenerate circle, that moved from two dimensions into one. Each of the Peircean categories can similarly appear in full form or broken down into fewer dimensions and thus appear veiled and encompassed in the form of a hierarchically earlier category. So would be the representation of agent and patient as separate but in interaction and accompanied by the social phenomenon of integration “be, indeed, germane to Thirdness, while it is alien to Secondness. That is to say, agent and patient as they are by themselves in their duality are not distinguished as agent and patient” (ibid. p.171) within secondness but only for a third, which then simultaneously raises the question and necessity for integration. Another example, intriguingly connected with developmental psychology and thus the aim of this article, is given by Heinz Werner and Bernard Kaplan (1963) in *Symbol Formation* – a book very relevant to understand our coming musings. Namely, “that it is generally assumed that a differentiation between subject and object is absent in the experience of the new-born infant” (Werner & Kaplan 1963, p.67). It takes several transitions “in ontogenesis as well as in the redevelopment of reality” (ibid. p.76) to move from conflating subject and object within one phenomenon – though, both are basically there from the beginning. This differentiation between subject and object is as well to move “from protosymbols to true symbols, symbols confounded neither with the objects they represent nor with [...] whom one shares the object” (ibid. p.76) and thus a movement from simple identity or adaptation to a phenomenon towards both a differentiated self and a phenomenon the self relates to however, both are still intriguingly connected at these earlier stages, when no thirdness that mediates between the pair has yet emerged. The old testaments poetic structure of parallelisms (Frevel et al. 2012) where for example the agent or god is one with his patient the world as in psalm 19:1: “The heavens proclaim the glory of God; The skies display his craftsmanship”.

The opposition of degenerate and genuine in Peirce’s work appears “in at least two senses” (Gorlée 1990, p.71): On the one hand genuineness can only be achieved by incorporating all categories and on the other hand all categories can have degenerate forms. This means, traversed to our context, that only with completion of the homeostatic system all four functions of homeostasis would be “one unified consciousness and therefore would act as a whole in a spontaneous integrality and unity” as Sri Aurobindo (2005, p.1041) circumscribes this ultimate end of development – an integrated “harmony of wholeness and oneness” (ibid. p.1041). Notwithstanding, earlier degenerate forms of each genuine function exist and however un-

formed the hierarchically later are, “there is no realized and unrealized, no counting, nor objective aim. All phenomena are primordially pure and enlightened” as Longchen Rabjam (1996, p.317) writes in *the Practice of Dzogchen*. Everything that exists, exists on the basis of its homeostatic integration with the larger environment and that includes the presence of all later forms and that “all phenomena are completed in the primordial, infinite, marvelous Great Perfection” (ibid. p.274) that in its ever presence as ever potentiality can be evolved by its own primordial freedom as communicative action.

However, since homeostasis means in part to be integrated into one’s environment, too, a third mode of degeneracy can be assumed: due to the center of gravity given by different life-worlds, a person can be merely pre-conventional. Pre-conventional not in the sense of Lawrence Kohlberg’s (1969, p.51) definition, “as the level where the child reacts towards cultural rules and categorizations of ‘good’ and ‘evil’, ‘right’ or ‘wrong’ however, interpreting these terms only in respect of material and hedonistic consequences of actions”, rather as not genuinely matching the hierarchical complexity of a society’s objectives, norms and requirements concerning personhood, the use of rational means and communicative ability. Or as Ken Wilber (2006, p.129) states it in *Integral Spirituality*: if there “are actual structures of the Kosmos that exist at this time in history but that you have not yet traversed, that you have not yet become one with [...], [then] there are aspects of the universe itself that you simply have not yet become one with”, which concomitantly means that one can only exist within oneself as degenerate version of the culturally pre-given actuality which is one’s potential for genuineness. The process that then is enabled to unfold under perfect circumstances can be grasped by Lev Vygotsky’s (1978) idea of the internalization of higher psychological functions. The society serves as scaffold, and as he writes in *Mind and Society*, the set of more complex operations “that initially represents an external activity [...] [can be] reconstructed and begin to appear internally” (Vygotsky 1978, p.56f).

Still, there is a fourth mode of degeneracy related to our primordial freedom. Once a later structure is recognized, through the mentioned scaffolding or other means, the earlier stage’s modalities might no longer seem sufficient or benefiting enough. The earlier version of self in homeostasis then is established as deficient, as lack and degenerate. At the same time the step towards a later level in the sequence immediately will envision established solutions as problems based on a lack of complexity. Besides that, resultant problems of higher complexity become more likely. Thus, a homomorphy between self and environment or society becomes impossible and communication that is experienced as successful unlikely. Accordingly, evolu-

tionary and developmental achievements can solve problems but at the same time „problems arise from achievements” (Luhmann 2018a, p.508).

Within this fourth form of degeneracy as disequilibrium occurs through the attempt of assimilating or “incorporating new elements into one`s earlier schemata [...] in order to adjust them to new elements” (Piaget 1956, p.6f), but since those elements are constituted by a more complex point of view, that has been experienced as a state, they are per definition unassimilable through those earlier schemes. This constitutes the construction of “a pressure exerted by the environment” (ibid. p.6) that is differentiated from the earlier world. It therefore needs what Piaget (1956) called accommodation, the formation of “the ensemble of operations which makes it possible to deduce reality, in other words to confer a certain permanence upon it while supplying the reason for its transformations” (ibid. p.12) that fits the most hierarchically complex experiences causative for the perceived disequilibrium.

This gap between potential complexity and actual complexity unfolds evolutionary meaning. Meaning as defined by Niklas Luhmann (2018a, p.45) arises from a twofold and simultaneous difference: “difference as produced through the system and difference as observed by the system”. That is a negation of one`s primary foundation through memorizing a more desirable state that was initially generated within one`s own boundaries but at first experienced as elsewhere or beyond, a state that is more desirable through aiding to the experience of a surplus in potentiality. In an existentialistic wording this difference is an “act which decides its ends and its motives” (Sartre 1984 p.438). The experience of a potentially more whole, abundant and encompassing reality then can lead to accommodation through the selection of new schemes or functions and respectively a new personal being and essence. Since Jean Paul Sartre writes in *Being and Nothingness* (1984, p.438) that “it is freedom which is the foundation of all essences since man reveals intra-mundane essences by surpassing the world towards his own possibilities” the onset of accommodation can be seen as an act of willfulness and freedom. A freedom that here, additionally to the choice of conscious focus, thoughts, feelings and actions, means surpassing the world on behalf of an essence that is saturated by more hierarchically complex and integrated modes of communicative homeostasis.

In conclusion we can say that the four modes of genuineness and degeneracy allow a wholeness that is at first completely unwholly but in that already complete and a permanent tension between an actuality and a potentiality. A final harmony is pre-given through all three: by society, by the individual meaning making and by the finality of the homeostatic system and thus a freedom is established as “a lack of being in relation to a given being [...], not the upsurge of a full being” (Sartre 1984, p.485). Yet, this potential wholeness rests behind a silk-

en slumber, always palpable, but like in Franz Kafka's (2019) novel of *the Castle*: nightmarishly vanishing before our eyes, withholding our grasp. An awful dream that nevertheless is promising a happy ending since "it supposes all being in order to rise up in the heart of being as a whole" (Sartre 1984, p.485), which is, to finally rest within the complete enactment of the whole homeostatic identity that is, according to Aurobindo (2005, p.1088), "taking up all truth of the instrumental existence into itself and giving to it oneness, integration, harmony". This freedom through internal as well as external communications can be seen as an equivalent to Piaget's (1956, p.11) regulative function: "the operations relating to totality [...] which therefore define the ideal equilibrium and regulate the particular values of judgment".

#### 2.1.4. Generalized Media and the Material and Formal Causes

For Aristotle (2019) potentiality and actuality as well as essence are strongly connected to the distinction between matter and form: in each existing thing "one thing is matter, another form, another their unification, and essence is both matter and form and the conjunction of both" (Aristotle 2019, 1035a) and from a human or phenomenological point of view this essence is always subsequent: "in consciousness existence must precede its essence" (Sartre 1984, p.438). In the case of homeostatic hierarchical integration through communication this means that the primordial freedom of homeostasis is always before its essence, which basically means essence in the sense of fusing aspects of matter with a specific form, or the homeostatic functions with their "one and individual ought" (Aristotle 2019, 1037b) or expressive unification.

A more modern formulation of the dichotomy between matter and form has been established by Niklas Luhmann (2018a). Based on Fritz Heider's (1999, p.319) recognition "that we not only recognize things unmediated, but we often recognize a thing through something else", that is through a medium. Sound as speech for example can carry a message and that message uses speech as its medium to convey itself, to generate a homomorphic state of one's expectations in another. The idea of medium assumes like that of matter that one cannot generate anything out of anything but the homeostatic system "operates in a manner that it fuses its own media into its own forms, without consuming but transforming the medium by this" (Luhmann 2018a, p.197) whereby each medium only supports specific forms. By this, a relatively loosely defined and structured substance is brought into less permanent but "strictly coupled elements" (ibid. p.198) that are causative as "homogenized means of motivation" (ibid. p.204). They, in the case of communication, increase the probability for "highly unlikely selections of shared meaning" (ibid. p.318). However, the difference between both, medium and form, is due to the distinctions made by an observer since "processes of media only

have importance [and reality] when and as long as they are connected to something important, for themselves they are mostly ‘nothing’” (Heider 1999, p.329). This becomes visible when we take light as example. Light in everyday life, though ever-present, gains its value only when we use it to elucidate a form, this might be to play with the facets of a diamond or colored windows of a cathedral – “only as long as the rays give me knowledge of things, they gain importance” (ibid. p.329f) and visibility. Respectively the medium is merely the form that enables and transports.

Besides Heider, Luhmann utilized many of Talcott Parsons’s (1969) ideas about media. Parsons coined a special type of medium that is of interest for our concept of homeostasis, the so called generalized symbolic medium. “All systems”, so Parsons (1969, p.519) “involved in complex and continuing interchanges with their environments [...], involve and are in part regulated by generalized symbolic media” (ibid. p.519). This type of media creates a “specialized language” (ibid. p.407). It increases the possibility for successfully “emitting and transmitting messages, combinations of linguistic components [...] [and ensures that] the particular symbols constituting any particular message ‘have meaning’” (ibid. p.406). Besides serving communication in the sense of generating predictability and certainty they are derived from “universalistic” components and follow a value-principle, namely “that discriminations among units of a system must be grounded in intrinsically valued differences among them” (Parsons 1967, p.325). At the same time, they support “integrative coordinative standards” (ibid. p.353) as their forms, that then are brought into specific types of messages.

The aspects of the homeostat can accordingly be considered as universalistic components that value either adaptation, differentiation, integration or self-thematization, but not already in a symbolic fashion rather in what Immanuel Kant (1998) in his *Critique of Pure Reason* called transcendental: The functions of the homeostat are an inclusion of “the elements of the pure cognition of the understanding and the principles without which no object can be thought at all [...], for no cognition can contradict [...] [them] without at the same time losing all content, i.e., all relation to any object, hence all truth” (Kant 1998, p.199). Homeostasis is built from “certain categories of thinking and of objective interpretation whose content is the changing, the genetic, the in-a-sense-capricious, yet which themselves stand for and represent in mental growth the uniformity and lawfulness of experience”, as James Mark Baldwin (1902, p.302) might say – and thus represent genetic modes analogous to what is explored in his cogitations on *Development and Evolution*. Henceforth, we refer to the functions of the homeostat as springing from *transcendentally* or *genetically generalized homeostatic media* that can sustain symbolic forms and communication in humans.

We earlier mentioned homeostasis or self-thematization as the final cause of development, while freedom or communicative action were named as the efficient one. The distinction between medium and form leads to a conception of development that integrates the four causes mentioned by Aristotle (2019) in his *Metaphysics*: The genetically generalized homeostatic media are “the immanent substance, from which something becomes” (Aristotle 2019, 1013a), respectively they stand for the material cause of development while “the form and the patterning – which is comprehended as completion of the essence” (ibid. 1013a) is found within the integrative coordinative standards that become visible “through the coupling and decoupling of the media’s components – from the just momentary integrations, that give rise to form, but can be dissolved again” (Luhmann 2018a, p.199).

For the neo-Aristotelian philosopher and poet Solomon ben Jehuda ibn Gabirol (2005, I, 10) in his *Fountain of Life* “the existence of a “universal matter”, respectively something like homeostasis as fourfold medium, “must have the following properties: self-existence, a single true being, support of diversity, provision to all things of its own nature and identity”. The aspect of diversity relates to our freedom within communicative action, while the provision to all things of its own nature and identity relates to the seeming fact that both individuals and groups or societies tend towards replicating the original homeostatic structures through certain sub-identities or systems and especially modes of observation or subject structures. As Robert Kegan (1982, p.28 & p.203) formulates it in *the Evolving Self*, “the evolutionary truces”, after the “collapse in the foundations that hold and culture one’s evolutionary balance, or [...] [after] one’s own evolutionary leave-taking of the balance which has been ‘me’, and which, in part, struggles to remain so, [...] establish a balance between subject and object”.

Those two properties, diversity through freedom and the generation of new subject structures, that strike a balance towards the world of objects, are part of a basic dualism. However, that dualism is simply visible through the reciprocal relationship between both sides and establishes itself only as divide in so far as accommodation sets in before assimilation or assimilation without accommodation or a lack of adaptation to and internalization towards the environment. Since the world of objects is constituted by the self-existence of each homeostatic function, that as media can only generate specific forms, or differently said “one single true mode of being”, there is a basic contrast to the diversity that can be generated on the other side of the split where we find the subject’s accidental expressions of the universals and their standards. Namely, what is simply in contrast to being merely contingent to individual freedoms in the sense of “neither necessary nor impossible; what henceforth is something that can be how it is, was and will be, but could possibly be different” (Luhmann 2012, p.152) or as

Kant (1998, p.494) states “the contingent is that whose contradictory opposite is possible”. However, paradoxically only on the ground of that contingent can we experience that which is necessary, thus determined in accordance with general conditions of experience. This is due to the fact that since it “has to be seen as conditioned and refers in accordance with the rule of the understanding to a condition under which it is necessary to refer this to a higher condition” (ibid. p.463) – the manifold, multiple and diverse reveals the “necessary lawfulness of all appearances in experience” (ibid. p.242).

The scheme offered is intriguingly connected to Kant’s (1998, p.212) *Table of Categories*. Figure 3 shows the four Aristotelian causes as they show up in the conception of homeostasis as hierarchical integration and how they can be accompanied by the oneness of the polar pairs of the Kantian transcendental modalities. For completion however, the pure concepts have to be extended through the oneness within the difference of the universal and particular, or as Hegel (2011, §514) would say “the person that knows as thinking intelligence the substance as its own being, and stops in this disposition, to be merely an accidental of it”.

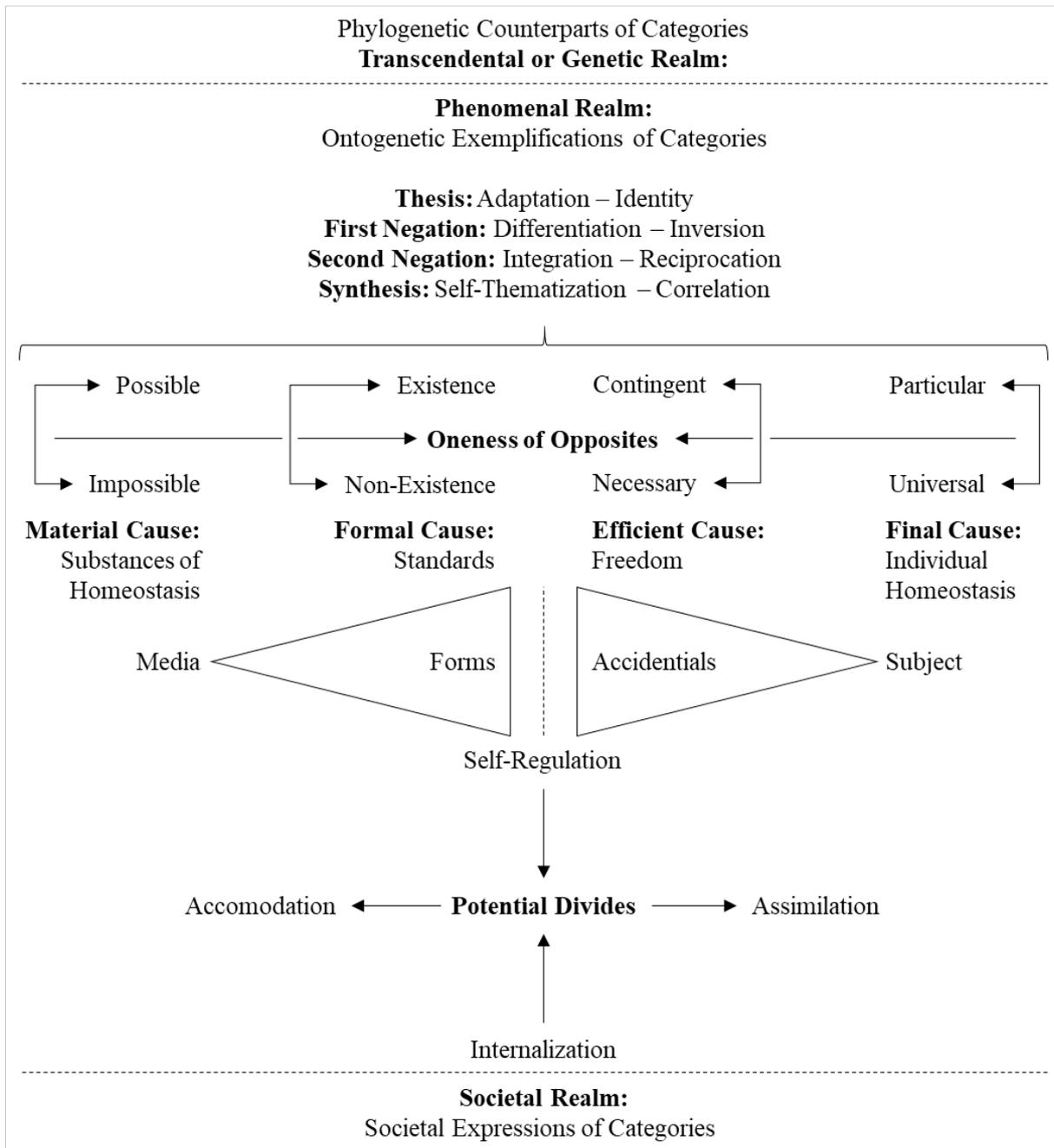


Figure 3: The Causative Scheme of Homeostatic Hierarchical Integration through Communicative Action within three Referenceable Spheres

### 2.1.5. Homeostasis and the Ego

In this article we are merely concerned about the material and formal causes of development, not so much with the side of accidentals and the subject. As we noted, it is quite arbitrary which terms we use for the media and which ones for the form. Both media and form can only mutually reveal themselves and do this within their oneness. The distinction is a mere pragmatic operation through observation and to disclose the media one has to look at a multitude of forms to extract them.

Since the model of homeostatic hierarchical integration through communicative action is partly meant to be an expansion of Jane Loevinger's (1976) conception of *Ego-Development*, we use the four functions the ego is meant to balance – namely cognitive style, impulse control or character development, interpersonal mode and conscious preoccupation – as the strictly coupled versions of adaptation, differentiation, integration and self-thematization; the Ego as a homeostatic form therefore is fundamentally characterized by being “a process, a structure, social in origin, functioning as a whole, and guided by purpose and meaning” (Loevinger 1976, p.67) which is including, beyond being conscious and having a dynamic unconscious drive, the “possibility of freedom” (ibid. p.67). Parallel, to further explicate the functions of the homeostatic medium and its structure, we present some cybernetic ideas developed by Stafford Beer (1994) in *the Heart of Enterprise*.

*Cognitive style* for Jane Loevinger (1970) is in a similar fashion as Lawrence Kohlberg (1976, p.124f) suggested, when he said that “logical development is a necessary prerequisite for moral development, but no sufficient qualification”, that which by its increase in complexity may act as a pacer or leading variable for the lagging ego-development. The cognitive style basically mirrors the form of the material function of adaptation since, so Parsons (1991, p.225): adaptation is “adaptation to ‘reality’ through cognition”. *Impulse control* or *character development* relate to “moral development in terms of the basis for moral behavior and the types of moral concerns” (Manners & Durkin 2001, p.542) as well as goal-orientation and hence differentiation. The *interpersonal mode* “represents the attitude towards interpersonal relationships and the other person, the understanding of relationships, and the preferred type of relationship [...] [whereas] *conscious preoccupations* refer to the predominant foci of the person's conscious thoughts and behavior, such as conformity to social rules, responsibility, and independence” (ibid. p.542). These two functions of the ego complement integration and self-thematization. For Loevinger (1976, p.27) in her book on the *Ego Development* construct discussion of all these facets “reveals one reason this dimension should be called ego development rather than moral development, development of cognitive complexity, or development of capacity for interpersonal relations. All of those are involved. Nothing less than the ego encompasses so wide a scope”.

But while “the ego maintains its stability, its identity, and its coherence by selectively gating out observations inconsistent with its current state” (Loevinger & Wessler 1970, p.8), media per se “do not determine whether or not the reaction towards a communication is acceptive or dismissive” (Luhmann 2018a, p.204). They only ensure that a certain homeostasis “is an operatively closed [...] system on the basis of communication and therefore its evolution

follows the challenges of communicative autopoiesis, which on its part is itself permanently modified in its conditions through [stagewise] evolution” (ibid. p.205). We therefore can only speak of attenuation or amplification when we relate to media. Environmental complexity becomes increased or broken down into information that exerts irritations within the system and thus challenges homeostasis. The form or the ego that rises from the underlying media then determines on the basis of the attenuated or amplified complexity whether the information needs to be negated, selected or is already known and valued and thus retained.

The necessity for attenuation and amplification are theoretically derived from one of the main dependencies of homeostasis – Ashby’s (1956, p.207) *Law of Requisite Variety*, which states that “only variety [...] [of the homeostat] can force down the variety due to [...] [the environment]; only variety can destroy variety”. In this sense stage development is a process of amplification of a self-system’s complexity and variety in order to cope with external complexity and variety.

At the same time however, to reach a state of equilibrium, one according to Ashby (p.1960, p.136) has not only to cope with the developmental and “large, infrequent” disturbances but, too, “with small, frequent, impulsive” ones which “act on the main variables” of the system. In the second case adaptation through the homeostat is not enough, but there have to be developed specific forms like the cognitive function that not only manage the easy problems “whose components are few and independent” (ibid. p.121), but with the difficult problems, the one “with many components that form a complex whole” (ibid. p.121). Henceforth many forms of reasoning which structure the adaptative function into rich and dense cognitive modes have developed over time. Similarly, the form of *character development*, which Kohlberg (1976) correlates with moral development can couple all, a normative order, “an orientation towards predefined rules and roles” (Kohlberg 1976, p.143), utility-implications, justice as fairness, as well as an image of ideal self as “the orientation towards an image, which the actor has of himself as a good person or someone with conscience” (ibid. p.143) or just one or either combination of all four to guide moral judgment. Kurt Fischer (1980, p.497) in his *A Theory of Cognitive Development* respectively distinguishes between “microdevelopmental transformations of differentiation, substitution, focusing, and compounding [which] eventually produce the macrodevelopmental transformation” we call stage development.

In reverse this means that on the one hand an increase of the number of persons with a later than average hierarchical complexity within a certain society leads to large, infrequent disruptions and on the other hand that the compounding of forms within a media slowly and step-wise amplifies the world’s complexity, thus forcing new problems that again either need peo-

ple to create new mechanisms of repressing or adopting through internalizing both: new homeostatic functions and new forms containing new objects, thus attenuating, or respectively amplifying their own complexity and ability to cope with the environmental variety. Stafford Beer (1994) in *the Heart of Enterprise* even formulates that “to deal with this situation [of increasing complexity of the life-world] competently, professionally, and responsibly, it is necessary to raise the performance level [...] [of the self] to cope with the greater variety exhibited”. As Vygotsky (1978 p.60) writes, development is more than “quantitative variation in the complexity of stimuli and in the response of different animals and humans at different stages of development”. It is not only the environment that affects human beings. “While admitting the influence of nature on man, [...] [man] in turn, affects nature and creates through his changes in nature new natural conditions for his existence” (ibid. p.60). Development thus is “a complex dialectical process characterized by periodicity, unevenness in the development of different functions, metamorphosis or qualitative transformations of one form into another, intertwining of external and internal factors, and adaptive processes” (ibid. p.73).

So, in a certain sense adaptation has one of its imperatives given through the law of requisite variety and the permanent participation in attenuation and amplification of environmental complexity. Since we assume multiple levels and iterations of levels within repeating orders of increasingly more complex and viable forms of homeostasis, so called tiers, there will, dependent on a person’s stage of complexity, be a need for what Beer calls *anti-oscillatory system*. Commons and Miller (1998, p.227) say in their sixth axiom that a “hierarchically more complex task and its required action must be defined in terms of the less hierarchically complex tasks and their required task actions”. The model of communicative homeostasis rather focuses on the necessity for freedom and cohesiveness of the whole self-system or ego. Later stages may act as meta-systems that “must make some intervention and should make only that degree of intervention that is required to maintain cohesiveness” (Beer 1994, p.158) and thus homeostasis and the related viability. Anti-oscillation in this context can be defined in manifold ways but basically it inhibits “uncontrollable oscillation” (ibid. p.177). It regulates and balances what is going to be recognized as the more perceiving or judging expressions of the developmental homeostat and it ensures that adaptative functions of earlier stages work only in their domain, and not within a later, e.g. that a formal task is not solved concretely. The coordination of earlier stages, hence genuine expressions of homeostasis, makes up much of the complexity and variety generated.

For being able to do this Beer constructs another system that is superior to the earlier ones, “in the sense that it has a synoptic view of all systems earlier” (Beer 1994, p.252). That means

it is aware of what is *Inside and Now*, which again is superseded by a state and system that looks at the *Outside and Then*, that is imaginative and ensures integration with different environments in the sense “that every regulator must contain a model of that which is regulated” (ibid. 234) to do so. It henceforth deals with uncertainty and accidentals. Both systems, however, are part of the final “decision-making body” (Malik 2008, p.83) that supports homeostasis through a “guiding principle, [...] the policies that determine the future latitude of behavior” (ibid. p.137). Like Piaget’s correlative transformation and the Luhmannian self-thematization it coordinates two operations, respectively both the *inside and now* and the *outside and then* perspectives. It ensures that a system becomes viable, that the property of self-preservation becomes “not just the power of self-reproduction, but of self-production. It is continuously in business to produce itself, to be what it is, to preserve identity” (Beer 1994, p.277).

According to Parsons (1966) one can look at any sequence or hierarchy of stages from two sides: there is a bottom-up *hierarchy of conditions*, in the sense of “necessary but not sufficient” (Parsons 1966, p.28), and at the same time a cybernetic top-down *hierarchy of control*, which, like the anti-oscillatory mechanism, “organizes the interrelations of the analytically distinguished systems. [...] Systems high in information but low in energy regulate other systems higher in energy but lower in information” (ibid. p.9). In this sense self-thematization or Stafford Beer’s last system, where one “out of many necessities, has reached cybernetic sufficiency” (Beer 1994, p.259), has to be the “eminence” (ibid. p.266) from where we can see reality, however “all its input is mediated by earlier systems” (ibid. p.264). Or as Luhmann (2017a, p.264) puts it compliantly: “a meaningful self-thematization of society can only be complete as long as it projects its objects on all three horizons” (Luhmann 2017a, p.264). This means that it not only has to be eminent and “monitor the operation of the balancing operation” (Beer 1994, p.265) of the earlier systems, but that it must not get “incognizant of its fundamentally subservient role” (ibid. p.264). Only if the ultimate works this way, a system can become “evolution [as adaptation] in temporal perspective, system-differentiation in factual perspective and communication in social perspective”, so Luhmann (2017a, p.264). Or respectively the homeostat enables to generate the aspects of the ego, where conscious pre-conception becomes the unity of cognitive mode, character development and interpersonal style.

This fourth system, as we said with Hegel (2011, §514), is the place where the individual and self-conscious freedom is directed as “un-intermediate general reality and simultaneously custom, [...] to create both through its occupation” (ibid. §514), the universal and the particu-

lar. It is a synthesis, and by this different from the first or thesis, adaptation which itself is, “by itself and for itself, the change of the object. Consciousness appears therefore differently established determined following the difference of the objects” (ibid. §415) and is in its more mature form of self-consciousness an “I = I [...] in which the I merges with itself [as on object of desire] and becomes satisfied by this, becomes a real” (ibid. §§424 & 428). Therefore, within the homeostatic hierarchical integration, the first and the fourth show up as opposite sides of a coin, as major polarities or antinomies, no matter how supplementary they are in the big picture. Luhmann (2017a, p.920f), too, states that while “adaptation as a learning process, reflection [as self-thematization] is a constituting process. In the process of adaption contingency has to be understood as ‘dependency from...’. Within the process of reflexivity contingency has to be understood as non-necessary possibility”. p.920f).

Moreover, we already mentioned, that the second and third functions of the homeostat are mere negations in a dialectical scheme, they are in the same way complementary and in opposition to each other with the third as integration only “has only its creative facility to visualize alternative futures, and to invent them (243) while the second is “surveys the total activity of the operational elements” (ibid. p.202) of the homeostasis and by this is “fundamentally synergistic, it offers a powerful yet minimal metasystemic intervention in elemental [adaptative] autonomy” (ibid. p.207). John Heron (1992, p.30) in *Feeling and Personhood* divides his quadruplicate scheme of the human psyche into “the complementarity of life and mind”. The psyche organizes the four functions so that they become “a dynamic interplay of life and mind” (ibid. p.30). For him, the fourth *affective mode* is to be “participating in wider unities of being, to become at one with the differential content of a whole field of experience, to indwell what is present through attunement and resonance, and to know its own distinctness while being unified with the differentiated other” (ibid. p.16). It together with his first *practical mode*, “the domain of the will, of individual acts and personal responsibility” (ibid. p.17), constitute the aspect of the psyche that turn towards life. Accordingly, the second and third functions of homeostasis, or as he calls them the *conceptual* and *imaginal mode*, serve the aspect of mind. The early does this through “relevant distinctions to service the pursuit of the individual needs and preferences” (ibid. p.17) and the later as “immediate comprehensive knowing, whereby the mind can grasp a field, a system or being as a patterned unity [...] [and] see its connections with other patterns, and know what it signifies, what it means” (ibid. p.17).

Besides dissecting the homeostat into aspects that are either oriented towards life or towards mind, which mirrors the homeostat as having both sensory and motor components (Ma-

lik 2008) integration and self-thematization compared to differentiation and adaptation can be seen as rather concerned about the inside: either in the sense of conceptualizing an *outside and then*, that it is about “inventing the future [...] [and] and it has only its creative facility to visualize alternative futures” (Beer 1994, p.237 & p.243) or in the sense of self-thematization being “the embodiment of the whole” (ibid. 490). As we will see later this rather internal perspective can, too, using Jürgen Habermas (1979, p.88) ideas on *Moral Development and Ego Identity*, be framed as centering around *complete reciprocity* compared to *incomplete reciprocity* in the sense, that based on a certain lawfulness two parties “may do or expect the same thing in comparable situations” (ibid. p.88). Like Peirce (1923, p.176 & p.260) states in *Chance, Love, and Logic*: “habit-taking is the only bridge that can span the chasm between the chance-medley of chaos and the cosmos of order and law”. As we said, laws and the necessary are part of discovering the accidentals and only within mediation or integration is the place where “the accidental characters become fixed” (ibid. p.176).

This, too, moves the second half of the homeostat in the direction of positivity or objective spirit. Integration allows what Kant (1998) calls, in distinction to categorial and hypothetical judgments, disjunctive, as a “community of cognitions, consisting in the fact that they mutually exclude each other, yet thereby determine the true cognition in its entirety, since taken together they constitute the entire content of a particular given cognition” (Kant 1998, p.209). August Comte (1875) in *the Positive Philosophy* would call this the third mode of science besides *observations*, “that can at most supply provisional materials, which must usually undergo an ulterior revision” (Comte 1875, p.82) since they gain their value only if attached to a second or “provisional hypothesis” (ibid. p.82), and *experimentation*, a form of negation where “the regular course of the phenomenon is interfered with in any determinate manner” (ibid. p.83). The third mode called *comparison*, especially “of the different coexisting states of human society” (ibid. p.86), operates disjunctive considering what “is uniform in the midst of all diversities” (ibid. p.86). It gives rise to the *historical method* as “a fourth, and final mode of the art of observing [...] proceeding from the whole to the parts” (ibid. p.88 & p.90), synthesizing the universal and particular.

In another sense the first two media generate the subjective spirit since as they are in the form of adaptation “by itself or unmediated” (Hegel 2011, §387) and in the form of differentiation “for itself or mediated however, as identical reflexivity into itself and into another” (ibid. §387). Objective in contrast means than the place within spirit, where these two aspects become objectified especially through the discovery of free will and its outside-and-then “freedom as its inner provision and purpose that directs itself towards externally encountered

objects [...] and into the relation of individual towards individual volitions, which are a self-consciousness of themselves as differential and particulars” (ibid. §483). Figure 4 sums up some of the functions we discovered around the four media of homeostasis.

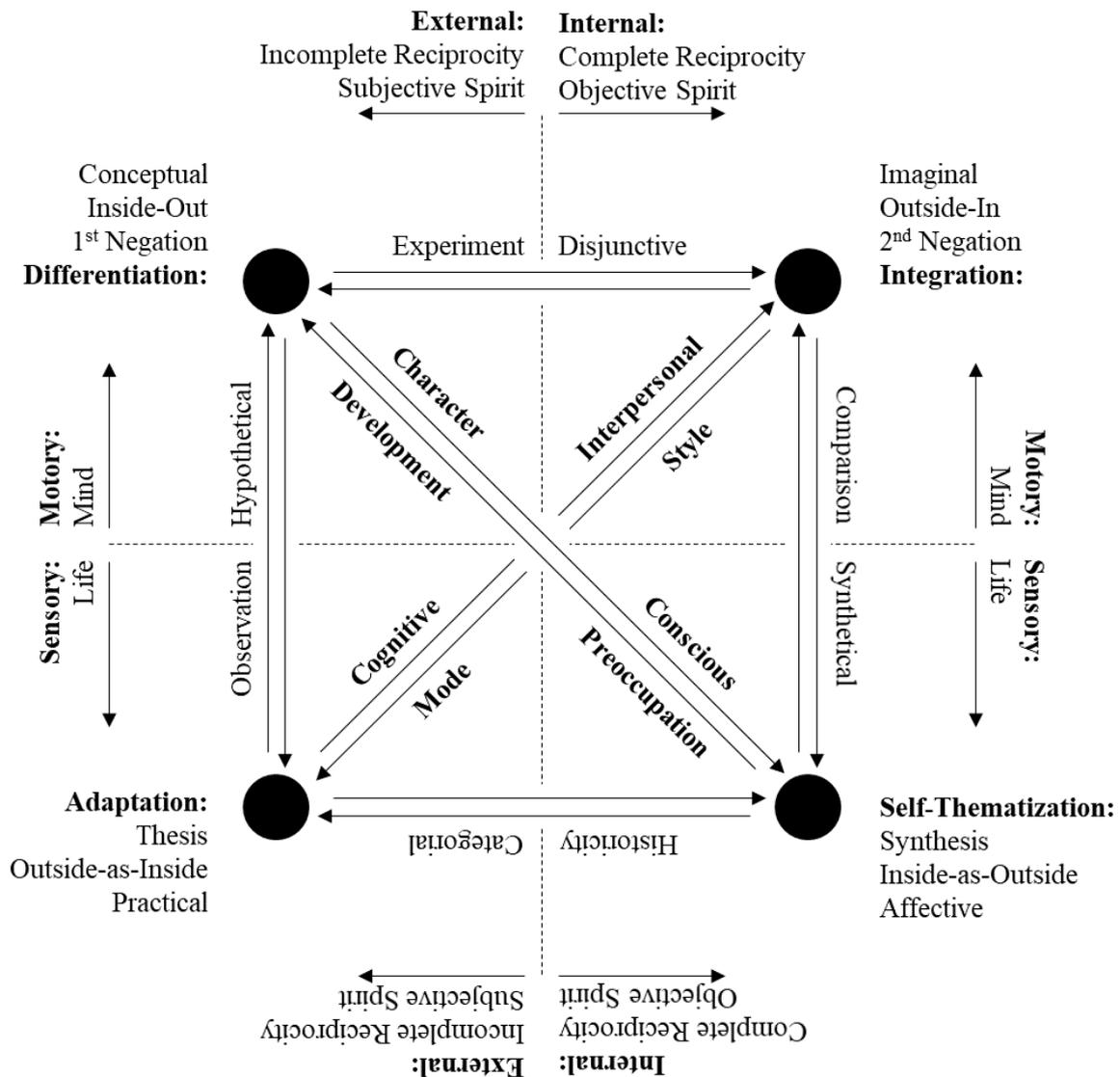


Figure 4: The four Transcendentally Generalized Media of the Homeostatic Hierarchical Integration and their Forms

## 2.2. Structures and Functions: The Metric of Homeostatic Hierarchical Integration

So far, we have worked on descriptions and explanations of development. According to Zack Stein and Katie Heikkinen (2009, p.7f) we thus have pictured a model, “something that informs our understanding insofar as it characterizes and accounts for things”. However, having a model is only one side of the coin since there are “two main species of representational devices” (ibid. p.8). The second species according to them are metrics “– often called scoring

systems – [which] deserve attention because they are situated near the heart of the discipline, and radically shape both research and practice” (ibid. p.4).

The model depicted here basically springs from syncretical comparison – the similarities between different concepts from multiple domains where combined. This happened on behalf of an intersubjective consensus beyond rigid boundaries of traditioned disciplines. Notwithstanding that consensus, we have to question ourselves as Jürgen Habermas (1988, p.93) suggests: “can the intersubjectivity of communicative experience be sufficiently guaranteed by standards of measurement in the same way”?

The metric underlying and supporting the model of homeostatic hierarchical integration through communication similar to our comparison, that created the ontologies of our model, draws on many sources, but basically is a refinement of Lê Xuân Hy’s and Jane Loevinger’s (2014) *Measuring Ego Development* as well as Susanne Cook-Greuter’s (2010) conception of *Post-Autonomous Ego-Development*. This refinement was guided through a method that is close to that which Michel Foucault (1972) describes in his *Archeology of Knowledge*. It tries “to establish, between so many different changes, analogies and differences, hierarchies, complementarities, coincidences, and shifts: in short, to describe the dispersion of the discontinuities themselves” (Foucault 1972, p.175). However, despite Foucault’s doubt of deploying “two heterogeneous stages on either side of a split” (ibid. p.175), the analysis of hundreds of authors’ lifeworks allowed to do exactly this – to generate an even and domain general metric of stage development across four times four stages each including four distinguishable phases. This method was exemplarily depicted in Roman Angerer’s (2020) *Luhmann’s Life Work and Tier Patterns: The Analysis of Differences and Contingent Patterns* where an in depth analysis of the scoring system is laid down and correlated with three other stage taxonomies: Ann Colby’s and Lawrence Kohlberg’s (2010) *Standard Issue Scoring Manual*, ego development theory and measurement as depicted by Hy & Loevinger (2014), Cook-Greuter (2010) and Terri O’Fallon (2010), as well as with Michael F. Mascalo’s and Kurt Fischer’s (2010) *Dynamic Development of Thinking, Feeling and Acting over the Lifespan*.

Another way to look at the difference between metric and model is that “a spontaneous build structure equals its function” (Jantsch 1986, p.75). Erich Jantsch (1986, p.75), in his book about the *Selforganizing Universe*, calls exactly this the “expression of a foundational equivalence between *structure and function*, which represents one of the deepest laws of selforganization”. Henceforth we oftentimes referred to functions of adaptation, differentiation, integration and self-thematization when we wrote about media. These eventually are the operations or acts supporting and foundational for their respective forms. But on the other side

each media has its own unique structure: the function of speech has as its structure a waveform, and light is merely a unity of the different possibilities within the wave and particle dualism which can function as carrier of images.

Theo Linda Dawson (2004) in her essay on *Layers of Structure* refers to what we see call a media's structure as Commons' (et al. 1998) additional hard structure criteria for measuring hierarchical complexity. These criteria built the core of an assessment and require "that the 'stage' properties of performances are abstracted from the particular tasks they address, and that the logic of each stage's tasks must be explicit" (Dawson 2004, p.9). Referring to our Kantian (1998) expressions of homeostasis this means that at the core lies the function of the *categorical judgment* which is "that of the relationship of the subject to the predicate [that], must necessarily come to the concept of the absolute unity of the thinking subject" (Kant 1998, p.226 & p.406). This unity and its predicate, in the model of homeostatic hierarchical integration through communicative action, is different than the "unidimensional developmental measure of difficulty across domains" within Michael Commons (et al. 2014, p.10) *Model of Hierarchical Complexity*. As we will show, it applies different criteria for its five main measurable aspects namely, for tiers, stages, subphases, transitions and types. Nevertheless, all the structural aspects of the medias' functions that are used as measures at the core can be seen as aspects of a universal grammar or generalized semantics. Universal Grammar, using Noam Chomsky's (2007, p.24) wording in *Language and Mind*, implicates that we try "to formulate the necessary and sufficient conditions that a system must meet to qualify as a potential human language" belonging to a certain stage and type, "conditions that are not accidentally true of the existing human languages, but that are rather rooted in the human 'language capacity,' and thus constitute the innate organization that determines what counts as linguistic experience and what knowledge of language arises on the basis of this experience" (ibid. p.24). We therefore as Stein and Heikkinen (2009, p.12) write use an analytical technique that "dubbed structural properties as indexes of development: for example, they privileged attention toward properties like differentiation/integration, concreteness/abstractness, simplicity/complexity", yet all of them are derived from analyzing the superstructure on a sentence level and within the textuality. Within this article we restrict ourselves towards the sentence level analysis paying credit to the use of our model with a modified version of the *Washington University Sentence Completion Test* developed by Loevinger and Wessler in 1970.

Ego development is assessed via a sentence completion test, "a projective technique, a technique that requires the subject to project his own frame of reference," (Loevinger &

Wessler 1970, p.8) onto an instrument typically containing 18-36 sentence stems, such as "The thing I like about myself is...", that have to be completed. For Loevinger a categorial assessment or a core structure that guides the evaluation of sentence completions does not exist: "The basic strategy of the measurement is probabilistic. There are no simple, absolute, logical rules, however appealing such a prospect" (Hy & Loevinger 2014, p.9). Like Kohlberg (1979, p.198) writes in the *Meaning and Measurement of Moral Development* one of the main challenges "of the assessment process is to improve the distinction between structure and content of statements" and in the methodology of assessing ego-development "some scoring categories can be used in the sense of representing 'structures'. Conceptionally they reflect approximately the organizing principles of a stage" (ibid. 194) while others deal with what he would call "content" (ibid. p.194).

When we stay with Dawson's (2004, p.9) terminology Kohlberg's structure level corresponds with her "surface structure level". This, too, is followed by conceptual content. However, some of Hy's and Loevinger's scoring criteria point directly down towards simple logical measures at the core of development. They for example classify the *E7* Pluralistic and *E8* Autonomous stages as "both... and" in the meaning of a likelihood to bring together "ideas that could be considered as polar, incompatible opposites" (Hy & Loevinger 2014 p.19) as well as construing "conflicting alternatives as aspects of many-faceted life situations" (ibid. p.22) while the *E9* Integrated person's grammar supposedly is synthesizing since the stage is classified as generally "reconciliating" (ibid. p.24) where "many unite the specific and the general, and concern for inner life, presented as differentiated self-perceptions, and outer life, usually relationships with others" (ibid. p.24), is dialectically combined.

But mainly we can classify Loevinger's approach as *disjunctive* a syllogistic reasoning that "necessarily carries with it the highest rational concept of a being of all beings; a thought which at first glance appears extremely paradoxical" (Kant 1998, p.406) since we deal only with accidental expressions which in Loevinger's assessment methodology works through "matching a response to the scoring manual for an item" (Loevinger & Wessler 1970, p.113). The being of all beings "that contains the supreme condition of the possibility of everything that can be thought" however, is not like for Kant (1998, p.406) god and subject to theology, but the "need for meaning and communication [...] that drives people to integrate into their lives every difference that enters awareness, by either labeling it or filtering it out" (Cook-Greuter 2010, p.37f) and thus the "'ego-stages' or 'self-identifications'" (ibid. p.37).

Kohlberg contrary to prioritizing content deals with the surface structure level which reflects "the logical procedure in *hypothetical syllogisms*" as Kant (1998, p.406) would call it

which “leads to the ideas of the absolutely unconditioned in a series of given conditions” (ibid. p.406). Kohlberg, Levine and Hwer (1984, p.275) called this procedure to “derive from preferred content the structure, as ideal type, which logically connects the normative content of each stage”. A procedure that was further developed to “distinguish completely the form of moral judgment from its content” (ibid. p.275) instead of reaching from the content towards “a transcendental cognition of god” (Kant 1998, p.406) – the differing levels of meaning making. The measure of homeostatic hierarchical integration through communicative action though it basically relies on the core structure integrates both of these levels, the surface structure and hypothetical as well as the conceptual level and disjunctive judgment, into its assessment methodology.

As said disjunctive in the context of Hy’s and Loevinger’s (2014, p.85) manual for measuring ego-development means that “people of different ego levels share common concerns”. And thus, item analysis and deriving a stage assessment can be based “on a list of themes that run through several levels. [...] Within each theme there are sets of similar responses, called categories” (ibid. p.85). Some of these items were, exemplary and as a hedge for an assessor, restructured based on the core metric of homeostatic hierarchical integration. Within this themes and categories were simply subordinated to form-statements that point to what Kohlberg, Lewin and Hwer (1984, p.276) called “the formal aspect of stage”. Later on, in this article, the practical section will depict the scoring process and show an example of interrelating all three layers of an assessment.

However, as Robert Kegan and Lisa Lahey (1998, p.40) state in their article *from Taxonomy to Ontogeny* “mature theories of personality development need to provide us with both a taxonomy and an ontogeny”. Where taxonomy means the order and number of stages and ontogeny an overarching construction, the descriptions and explanations of the structures underlying the stage sequence and the process of their reconstruction. According to their point of view it is benefiting to “not only assess ‘stages of ego development’, but specifically to explore our particular conception of the underlying structure and process that gives rise to stages of ego development” (ibid. p.47). In fact, this approach is supportive of a fourth mode of assessing that is complementing the categorial, hypothetical and disjunctive modes.

One of the basic assumptions of Commons’s (2008, p.3) *Model of Hierarchical Complexity* is that “there is no structure of the whole for performance”. By this he means that development is marked by a so called Decalage, as Piaget (1971) called it, the phenomenon of uneven development or horizontal displacement. The post-Piagetian developmental psychologist Kurt Fischer therefore uses a web metaphor for human development to highlight the “local varia-

tion of activity within global order, [...] the multi-directional nature of development, including forward progression and backward transitions” (Mascalo & Fischer 2010, p.163). Exactly Kegan, Lahey and Souvaine (1998) argue that through exploring the underlying structures and processes by means of their assessment that although “it would be too simple to suggest that one`s most complex epistemological principle [of one`s latest stage] is the only way one organizes experience all the time, across all domains” (Kegan, Lahey & Souvaine 1998, p.58) one should not drop a “consistency hypothesis” (ibid. p.58) of the ego. With the fourth mode of assessing beyond core, surface and content structure we try to carve out of each assessment the particular and individual expression of the universal and generalized homeostasis, the structure of the whole. We argue that that there is consistency despite the expressed differences in the stage distribution of assertions in a sentence completion test as well as within single responses which resemble aspects of the homeostatic self-system projected through the structure of the four functions into forms and accidentals.

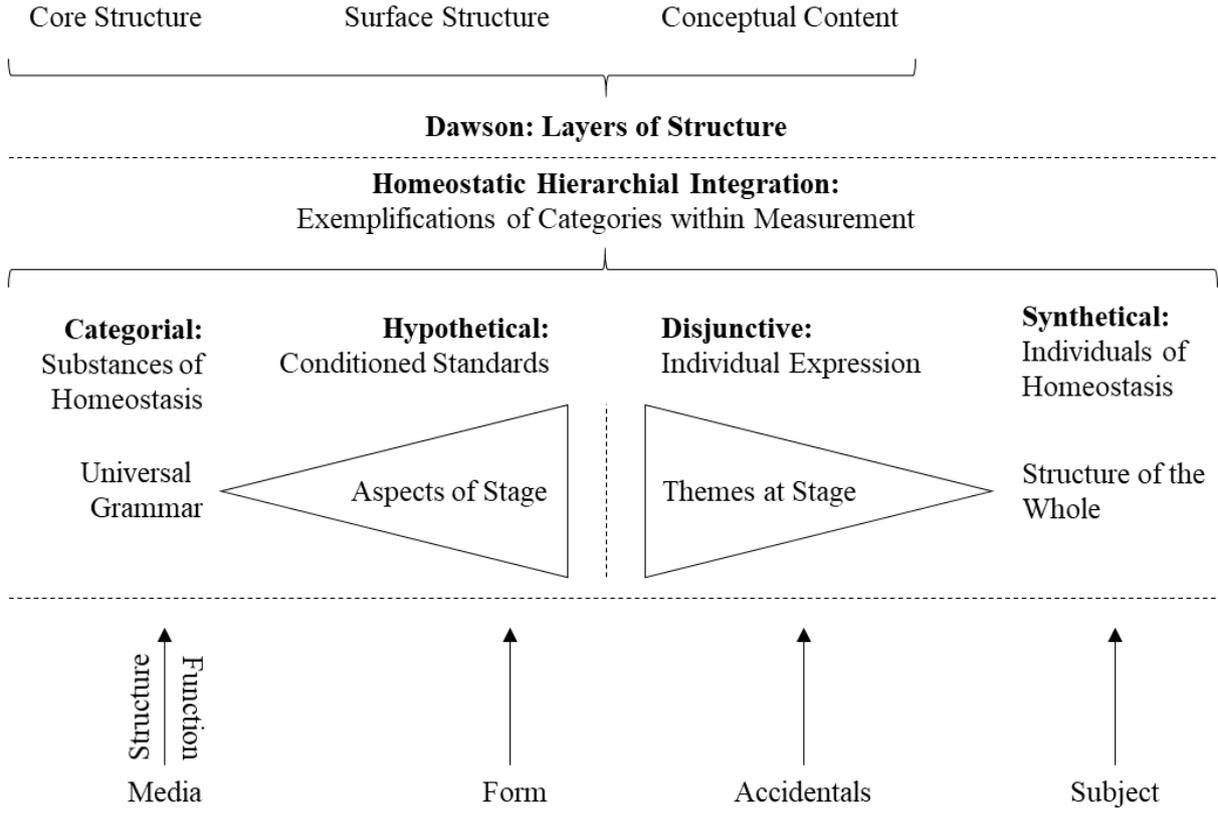


Figure 5: The Scoring Metric generated by the Model of Homeostatic Hierarchical Integration through Communicative Action

The following sections are going to exemplify the structures of the media and thus the universal grammar at the core of our assessment methodology. To visualize syntactical structures, we are going to use a form of *labeled bracketing*. This means, that we indicate the relevant information or grammatical structure and point to it as a phrase of a certain category with

a pair of squared brackets demarcating what is later introduced as rhemes and themes. This then looks either somewhat like this “[Theme One Label [Rheme One Label Rheme One Content] [Rheme Two Label Rheme Two Content]] [Theme Two Label [Rheme... Rheme ... Content]]”, when more rhemes than themes are included and like this “[Rheme One Label [Theme One Label Theme One Content] [Theme Two Label Theme Two Content]]” if there are more themes than rhemes within an utterance.

### 2.2.1. Themes and Tiers

Heinz Werner and Bernard Kaplan (1963, p.56) point at three linguistic fields that “enter into language: the field of pointing, the lexical-conceptual field, and the symbolic-syntactic field”. This means, that each response in a sentence completion test necessarily conveys its meaning through those three distinct and interacting layers as well as a fourth that we are going to point to later.

Within the *symbolic-syntactic field*, “language establishes its symbolic field by formal-syntactical rules; with symbolic units (words) one uses the symbolic field to build up sub-structures (sentences) which serve to represent referential reality – in some way ‘corresponding’ to this reality” (ibid. p.57). This third field is basically the place where grammar shows up as meaningful combinations and modifications of subject, predicate, object structures, the so-called syntax. Single sentences contain subjects (the actors), predicates (the acts) and objects (e.g. the goals of the actors’ actions), like in “[Subject the author] [Predicate is writing] [Object an article]” which are successively modified and complexified through stage development and hierarchical growth.

However, that meaning and the syntax work only on the basis of words. Each sentence on the word level has to be meaningful and can be so only through a *lexical-conceptual field* and cohesion: This means that “lexis is organized into a network of lexical relations” (Halliday 2004, p.570). Differently said, each word or phrase within a language has to be connected and substituted in relation to a known cultural lexical background of other words and word meanings. A “writer” has lexical cohesion with “author” and “author” with “text”, while “text” again points to “writing” and the “writer”. Additionally, each language has synonyms, antonyms, hyponyms, hypernyms and meronyms.

What lexical cohesion is, varies strongly with culture and time as Michelle Foucault (2005) shows in *the Origin of Things*. It is based on epistemes which for example rely on a certain amount of similitudes in which “signs themselves [...] [are] no more than a play of resemblances, and they refer back to the infinite and necessarily uncompleted task of knowing what is similar” (Foucault 2005, p.46). And thus, discourse works in such a cultural epoch as something that “by trying to approximate to it, by attempting to say things about it that are similar

to it, [...] [brings] into existence the infinity of adjacent and similar fidelities of interpretation” (ibid. p.46). Respectively lexis changes not only according to culture but, too, with new stages or as Ken Wilber (2006, p.261) writes: “Human beings can create languages – systems of signs and symbols – that represent various realities. For the most part, the referent of these signifiers exist in one or more of these worldspaces, and subjects can perceive these referents if they possess the corresponding developmental signified”, which means to incorporate a level of hierarchical complexity that can be revealed by the lexis within the *field of pointing*.

Again, the field of pointing can be seen as the categorical level, where only certain predicates can show up – those enabled by the adaptative structure of homeostasis, the established and applied cognitive mode – so that a homeostatic system “possesses its immanent nature” (Hegel 2010, p.575). The symbolic-syntactic field then contains this categorical level as well as the hypothetical level, it is the disjunction, that in the “negative unity” of differences, as Hegel (2010, p.582) calls it, where ideas can acquire “their essential connection and self-identity” (Hegel 2010, p.582), gain their symbolic meaning as contrast to other meanings and contexts.

However, in the attempt of a homeostasis there has to be a fourth field that using Aurobindo’s (2005, p.277) words “creates, governs and upholds the worlds: it is the secret Wisdom which upholds both our Knowledge and our Ignorance”. For upholding consummatory and instrumental object relations that are essential for the maintenance of patterns and core of self-thematization (Parsons 1969) it needs a that which gives the information structures to the whole. We call this the *thematic-rhematic field*, the condition for synthetic unity of all these levels as that which destines the communicative orientation towards a self’s interiority and its environment.

Normally “the *theme* is the element which serves as the point of departure of the message; it is that which locates and orients the clause within its context. The remainder of the message, the part in which the theme is developed, is called [...] the *rheme*” (Halliday 2004, p.64). Mostly the theme is recognizable as it introduces the sentence as in “[Theme: “who or what is it about?” the author] [Rheme: “what does the author do, what is important about him?” writes the article]”. Notwithstanding this definition, we use theme for what we call tier-operations. Tier-operation means that each of the four tiers the homeostat consists of has its own theme, that is developed and brought into wholeness through four stages. Basically, tier-operations are the functions a tier’s structure enacts within the medium, and by which certain forms can be sustained. These themes then can consist of a limited number of rhemes. Each rheme then is specific to a stage developing the themes possible at each tier.

As Heinz Werner and Bernhard Kaplan (1963, p.134) state, “among the global expressions of the child, emerge certain ones which, in some way, refer to a situation [...] [and] such patterns, insofar as they include a discriminable, vocally articulated element (‘vocal’), have usually been designated ‘one-word sentences’”. They call these one-word sentences also monoremic, a term we change into *monothematic*. Within these one-word sentences utterances like “wau-wau” for a dog are not yet real words or as Peirce (1998, p.161) might say they are a “Feeling, or Firstness, to represent itself to itself as Representation” without any second or third. It is the first tiers form of genuineness. The place where a child starts to raise external relations “to the rank of symbols by relation to themselves. The image so constituted therefore becomes the signifier of which the signified is none other than the sensorimotor schema itself” (Piaget 1953, p.353). As Werner and Kaplan (1963, p.118) write, those early signs however “do not depict stable, circumscribed things but rather refer to global events in which things and the agent’s action upon things are intimately fused”. As much as Piaget (1953, p.355) suggests that “the development of signs in the dual sense of accommodation to the things themselves and of detachment with respect to the immediate action reaches its conclusion during [...] [his] sixth stage” and therefore at the end of the sensori-motor period, at about one and a half to two years “when the schemata become capable of functioning alone through purely mental combination” (ibid. p.355), the “development from vocables as concrete ‘names’ to vocables as ‘words’ carrying full categorial significance is only begun at the two-vocable level”, so Werner and Kaplan (1963, p.144).

Hence, with the movement to the two-vocable level, or as we are going to say the *dithe-matic tier* of secondness, the genuineness of consciousness, additionally to being a simple adaptation to a phenomenon by a name or sign “fundamental to the development of later behavior patterns” (Piaget & Inhelder 2000, p.51), starts to expand, towards including the function of differentiation. As Luhmann (2018b p.1140 & 2018a p.460f) says by “opening up the Yes/No bifurcation” it becomes possible “to accept or neglect the offered meaning in an utterance [...]. By this, beyond others, variation comes into play by communication that refuses communicated content”. This makes possible to articulate oneself vocally in terms of a “multiple reference made possible through joint designation. In particular the [...] [monothematic] vocables are superseded by combined designations which, in relation to each other, are subjected to delimitation and specification” (Werner & Kaplan 1963, p.144), hence differentiation.

From this time on, using Peircean (1998) terminology, firstness is accompanied by secondness and an early form of propositional logic arises. The ability to indicate an object is ena-

bled. An “index”, so Peirce (1998, p.168), “is a representamen which is such by virtue of standing in a genuine reaction with its object”, it has a secondness, agency and goal-orientation. Too, this means, that development gives rise to a subject object relation since “the subject of a proposition must literally be an index” (ibid. p.168) or as Michael Washburn (1988, p.79) writes in *the Ego and the Dynamic Ground* “the child begins to refer to himself as I and he begins, in a concrete imaginal way, to ascribe properties to himself. In other words, the child’s self-image at this point, like all other of his mental images [...] ceases being merely a sign, a mental picture of the body and begins also being a concrete universal, a mental picture of distinctive, defining attributes”. This stage correlates with Miller’s and Commons’s (2007a, p.26) *Sentential* stage where “infants begin to use sentences, typically two-word sentences at first” and where “they begin to refer to themselves (I, my) and also to label themselves (boy, baby)” (ibid. p.26).

Too, Hegel (2011) thematizes this change in his *Encyclopedia*. It is the shift from the level of Being towards that of Essence where “self-relation [...] is the form of identity of reflexivity-in-itself which has here taken the place of the immediacy of Being” (Hegel 2011, §113). The shift from the first to the second tier is also pointed out by Sri Aurobindo (2006, p.634) in *the Synthesis of Yoga*, when he writes that the “*soul in body* is the physical conscious being, annamaya purusa, which uses life and mind characteristically for physical experience [...] [and] does not look beyond the life of the body and, so far as it feels anything beyond its physical individuality, is aware only of the physical universe and at most its oneness with the soul of physical nature”. This physical being namely can grow into a *soul in life* which is the vital conscious being, pranamaya purusa, which is capable of looking beyond the duration and limits of the physical body, of feeling an eternity of life behind and in front, an identity with a universal Life-being” (ibid. p.634).

This dithematic tier culminates in Piaget’s and Inhelder’s (1953) *formal operational* stage where the typical form of propositional reasoning includes two themes that are equilibrated in a structural whole as in this example: “[Theme One: The more the target approaches the plunger,] [Theme Two: the more the plunger must also approach the target]” (Piaget & Inhelder 1953, p.11). This example is a response to the so called “plunger task”, where the subject attempts to hit a target, placed at different locations on a table, with a marble shot from a spring-loaded plunger. As already shown firstness and secondness without an idea of thirdness equals the structure of some mythic literal writings in Judaism but, too, that in the *Hymns of Homer*: “[Theme One: And so long as she, the goddess, yet beheld earth and starry heaven and the strong-flowing sea where fishes shoal, and the rays of the sun, and still hoped to see her dear mother

and the tribes of the eternal gods,] [Theme Two: so long hope calmed her great heart for all her trouble and the heights of the mountains and the depths of the sea rang with her immortal voice]” (Hymns II, 33-39). The same architecture seemingly shows up within scorings based upon a scoring manual developed by Commons and colleagues (Commons, Danaher-Gilpin, Miller, & Goodheart, 2005) given an assessments done by Miller and Lee (2007b, p.11) where abstract stage-statements exceed “story-telling statements [...] [that] either showed the basic coordination between two people, or between two attachment entities”, since they “contained some kind of recognition that the reaction to an event could have been different or could be variable under different circumstances”. Therefore, a girl when asked about the severity of losing a hat that “[if it's something very, very special to me, really, really important and I always loved it,] [then I would be a little more scared and worried that I lost it]” (ibid. p.11), then from losing a hat.

Piaget and Inhelder (2000) assume at this point in development, resembling the last sensori-motor stage and the invention of new means through mental combination, that one at her formal stage “becomes capable of drawing the necessary conclusions from truths which are merely possible, which constitutes the beginning of hypothetico-deductive or formal thought” (Piaget & Inhelder 2000, p.132) – respectively one discovers a new form of “sudden comprehension or insight” (ibid. p.11f). Hence, regardless of Piaget considering it a new form of thought we rather assume that it signifies the last stage of our second tier. Referring to Aurobindo’s (2005 & 2006) conception of different bodies, identities or tiers each last stage of a body is an intermediate stage. It is no longer completely this worldly but not yet completely otherworldly, which means not yet the next tier.

As much as John Heron (1992) includes at the intersection of the fourth to the third function of personhood in a movement from “indwelling states” towards “visionary states” create the *world of presence*: “A unique disclosure of being that both grounds and unites all its immaterial qualities and its perceived form” (Heron 1992, p. 158). There we discover, that we are “both distinct within, and one with, a universal presence” (ibid. p.10) – the indwelling of the propositional reasoning at the end of firstness, and the indwelling of abstractions at the end of secondness, as well as the indwelling of intuition and presence at the end of thirdness, which not only John Heron but many others refer to (Angerer 2020). One example would be Otto Scharmer and Katrin Kaufer (2013, p.29), when they write, in *Leading from the Emerging Future*, that we can “lean into and connect to our highest future potential”; here we merge presence with sensing and thus “operate from the presence of an emerging future field” (ibid. p.29).

Aurobindo calls this final stage of our third tier the higher mind. It “is able to perceive and deal with other souls as other forms of its pure self” (Aurobindo 2005, p.181) in the same way as for Hegel the truly ethical life arises, when inside touches inside: “the disposition of the individuals is the knowledge of the substance and the identity of all its interests with the whole” (Hegel 2011, §403). A stage that is more mundanely formulated by Kohlberg (1976, p.132), “the perspective of any rational individual, that acknowledges the essence of morality or acknowledges that any human contains within itself its end-purpose and has to be treated accordingly”, which means being at moral stage six.

The mental for Aurobindo (2006, p.470), where “a mental soul, *manomaya purusa*, in whose nature the clarity and luminous power of the mind acts in its own right”, has this intermediate stage henceforth through the higher mind. But since such an intermediate stage exists at each tier, a mental vital is connecting the mental with the physical life, the third to the second body. It connects the vital or life to mind proper, which is “divided in three parts – thinking Mind, dynamic Mind, externalizing Mind – the former concerned with ideas and knowledge in their own right, the second with the putting out of mental forces for realization of the idea, the third with the expression of them in life” (Aurobindo 2012, p.177). This series then is concluded by the higher mind not yet completely spiritual but no longer completely mental either. It enables presencing, “the mental Purusha [or self] rising into the *vijnanamaya* [...] by conversion of its movements into the movements of the gnosis [turns] its mental perception, ideation, will, pleasure into radiances of the divine knowledge, pulsations of the divine will-force, waves and floods of the divine delight-seas” (Aurobindo 2006, p.486).

Vijnana, gnosis, spirit or Supermind then forms Aurobindo’s (2005, p.282) fourth tier – “fourth to that in its descent, fourth to us in our ascension”. Superior to the powers of “Mind, Life and Matter, the lower trilogy, [that] are also indispensable to all cosmic being” (ibid. p.282).

Aurobindo’s mental tier fits, too, with Hegel’s (2011, §160) development of the *notion* “which is the principle of freedom, the power of substance self-realized. It is a systematic whole, in which each of its constituent functions is the very total which the notion is and is put as indissolubly one with it”. That is finally followed by a fourth, the *absolute Spirit* “as reality that is equally eternal in itself as it is returning and returned Identity; the one and general substance as spiritual [...] as the certitude of the objective truth” (Hegel 2011, §§553-555). The third tier that corresponds to the Peircean thirdness can be structurally recognized by including a third theme. It enables *trithematic* assertions.

If we take for example a notion from Aristotle chosen by pure chance, we can see how the reasoning at Piaget's formal operation stage is superseded and coordinated by a third: "[Third Theme: Integrative For the purpose of action experience is in no way inferior to art rather we see, [Third Theme: Formal Part One that the experiences tend to meet the ticket to a higher degree] [Second Theme: Formal Part Two than those who without experience only own the general notions]". Too, we can see that here the *field of pointing* is included in the second theme as "to meet the ticket" has to do with reality, while the third theme points towards the *lexical-conceptual field*, in the sense of general notions or ideas. The third concomitantly is defining the symbolic meaning of the syntax, it is an expression of the *symbolic-syntactic field*, in which themes and rhemes can find their culturally conditioned expression – a mode of integration as "selective ordering among the possibilities of orientation" (Parsons 1991, p.4) from the fourth.

The structure of the fourth reaches up to Commons's *Paradigmatic and Cross-Paradigmatic* stages, or the *Construct-Aware* stage of Ego Development in Cook-Greuter's work, also known as Loevinger's *E9 Integrative*. We have already mentioned that Loevinger saw the synthetic structure most explicitly expressed at this, her culminating, stage. It is the triadic structure of the Hegelian dialectics that expresses itself at this stage. Hence Hegel (1977, p.408) in his *Construct-Aware Phenomenology of Spirit*, too, expresses this structure when he for example writes that both good and evil "[Third Theme: Synthesis are purified into the unity in which there is no longer in them any existence devoid of self, any negative of consciousness,] [Second Theme: Pole One where on the contrary, duty is the unchanging identical character of its self-knowledge,] [First Theme: Pole Two and evil equally has its purpose in its being-within-itself, and its actuality in its utterance]". Then, one stage later, at Susanne Cook-Greuter's (2010) *Unitive* stage, Hegel's (2010) writing turns *quattrothematic* in his *Science of Logic*, where he also first thematizes the idea of dialectics as quadruplicity. Henceforth, "[Theme Four: Theme of Self-Thematization the realized good] [Theme Three: Theme of Integration is good by virtue of what it already is] [Theme Two: Theme of Differentiation in the subjective purpose,] [Theme One: Theme of Adaption/a Phenomenon in its idea;] [Theme Four: Theme of Self-Thematization the realization gives it an external existence,] [Theme Three: Theme of Integration but since this existence has only the status of an externality which is in and for itself null,] [Theme Two: Theme of Differentiation what is good in it has attained only an accidental, fragile existence,] [Theme One: Theme of Adaption/a Phenomenon not a realization corresponding to the idea]" (Hegel 2010, p.731).

It is in this fourth tier, that *quattrothematic* statements can embrace all three earlier aspects of homeostasis in both, their expression as tier-structures and their functions. But not only in respect to this, does the *Unitive* stage present "an entirely new way of perceiving human exist-

ence and experience of consciousness”, as Cook-Greuter (2013, p.86) writes. It is also an ability to “express this awareness of an underlying unity” (ibid. p.73) which Aurobindo (2005, p.1035) writes about, when he says that “all energies of being seek their self-expression and at their highest seek their absolute; this they find in the supreme Self, and they find at the same time their supreme oneness, harmony and mutuality of united and common self-expression in its all-seeing and all-uniting dynamic power of self-determination and self-effectuation, the supramental gnosis” – the fourth now no longer degenerate but slowly establishing its original genuineness.

Hence, we here deal with two main modes of completing a sentence, either by embracing all earlier tiers and thus the genuine completion of the more vertical axis of homeostatic hierarchical integration through communicative action or to express a more horizontal completion that is describing more consciously the unity of differences as does Luhmann (2012, p.138) when he says that “[Fourth Theme: Fourthness as Self-Thematization at present we have to hold on, that the generalization of meaning presences horizons,] [Third Theme: Secondness as Differentiation or Resistance which always and irrefutable allow to return,] [Second Theme: Firstness as Adaptation to Phenomenon in face of difference (or in special intensification: contradiction),] [First Theme: Thirdness as Integration to the unity in meaning of the difference (or the contradiction)]”. In specific he means that one can choose contradiction or difference “only in unity” as for example the boundary of a system is always both, “a oneness of the difference between system and environment” (ibid. p.190). Fourthness thus allows to be aware of certain objects valuing the ever presence of a dialectic unity, the triplicity created by thirdness. Differently said one is enabled to self-thematize “this unity of all these terms of opposition [which] is the real Advaita, the supreme comprehending word of the knowledge of the unknowable”, so Aurobindo (2005, p.164). Hegel (2010, p.514) formulates this in specific exemplification, when he says that “the universal and the singular, is a totality; each contains the determination of the other within it and therefore the two are just as absolutely one totality as their oneness is the diremption of its self into the free reflective shine of this duality. And this is a duality which in the differentiation of singular and universal appears to be perfect opposition, but an opposition which is so much of a reflective shine that, in that the one is conceptualized and said, immediately the other is therein conceptualized and said”.

As might be tangible, our assessment structure reveals the somersault that self-thematization is. The structures by which we assess development become visible only on the basis of the homeostatic functions expressed and the aspects of stage and themes condensing the structure of the whole are both, not only expressions of earlier but their revelation. There

is a deep unity pervading itself and spinning its circles. Similarly Adi Da Samraj (2009, p.1164) writes, in *the Aletheon*, about the human destiny of divine translation in a fourth tier grammar: “[Forth Theme: Fourthness as object of Self-Thematization The conditionally arising cosmos and ‘world’] [Third Theme: Thirdness as Integrative Whole that is the apparent ‘experiential’ circumstance of human life] [Second Theme: Secondness as Differentiated Agent is a ‘cause-and-effect’ driven field of universally self-originating and self-organizing (and intrinsically egoless) patterns –] [First Theme: Firstness as Phenomenon Differentiated from and not an independently ego-oriented or ego-driven (or, otherwise, ‘deity-caused’ or ‘deity driven’) field of identities]”. The thematic-rhematic field is self-originating and self-thematizing its structures, functions, forms and accidentals – that than can give rise to essence based on its primordial and intrinsic freedom and the expression of ego as the form of all the homeostatic media that are already fundamentally “self”, in the sense of thematizing, organizing, originating and so forth. As Sartre (1984, p.103) frames it: “the Ego is far from being the personalizing pole of a consciousness which without it would remain in the impersonal stage; on the contrary, it is consciousness in its fundamental selfness which under certain conditions allows the appearance of the Ego as the transcendent phenomenon of that selfness”. All aspects mirrored in an assessment are the self-revelation of the homeostatic completeness within the *thematic-rhematic-field* that accordingly is only visible on the basis of the three earlier tiers. Scoring appropriately the thematic-rhematic orientation then is only possible on account of all three: the symbolic-syntactic, the lexical-conceptual as well as the field of pointing. They so to say and as Figure 6 shows can be depicted as the vertical axis completing the efforts of the horizontal axis.

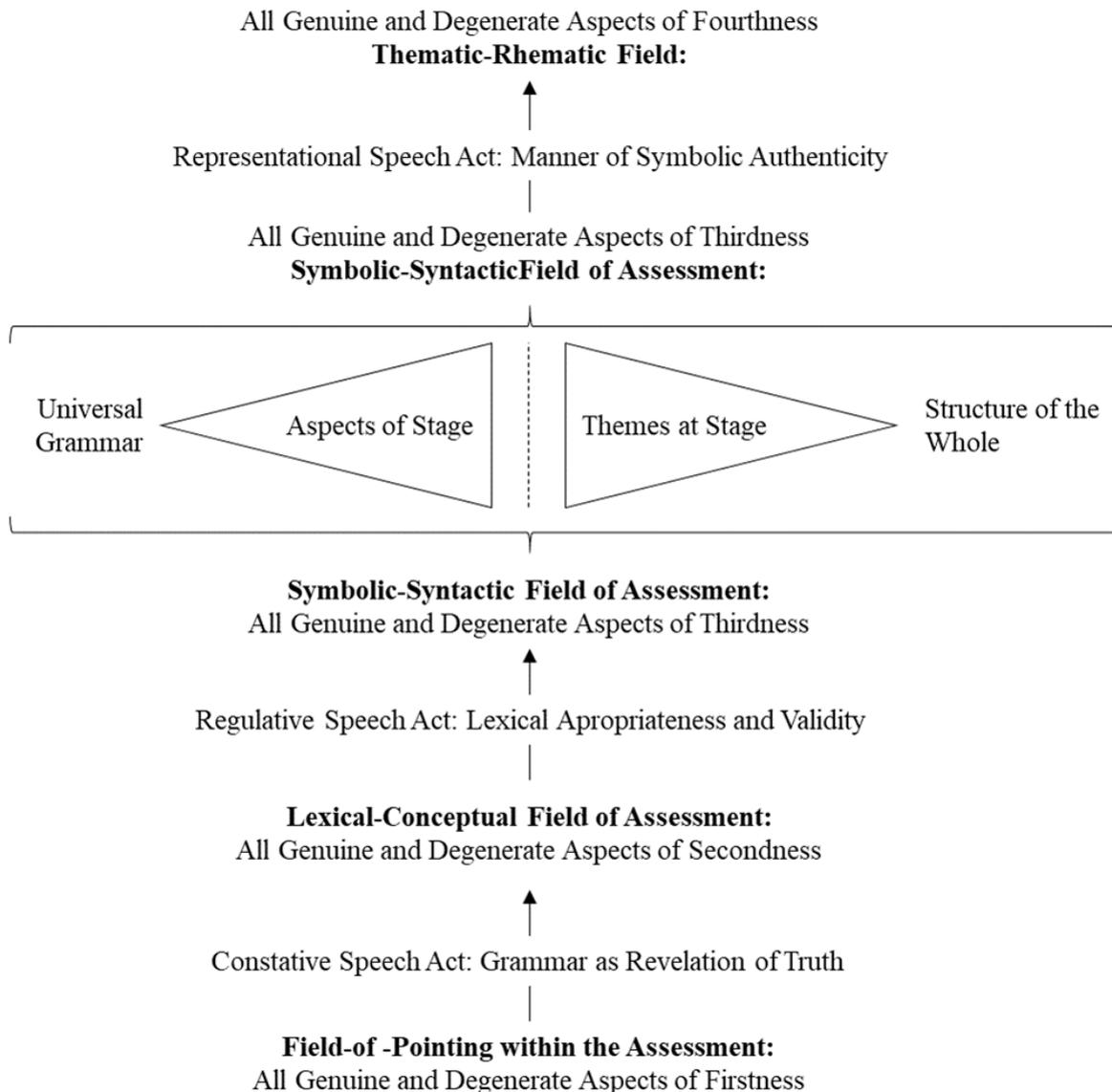


Figure 6: Vertical and Horizontal Dimensions of an Assessment and Moral Aspects from Speech Act Theory

Since we deal with a model of communicative action and homeostasis, an assessment has to generate a representation of a state that is homomorphic in both the assessor and the assessed. But as Habermas (1982, p.247) points out in an essay about *Universal Pragmatics*, this requires “behavior that is oriented towards understanding”. There has to be included a “serious offer” which means that certain themes as dimensions of someone’s reality are self-thematized and revealed within a statement according to three dimension: “the manner in which the reality dimensions appear in the depicted references towards reality; the validity claims on which the offer depends; and the general functions of object enaction, the grammatical sentences applied” (ibid. p.259). However, since the tier structure, and as we are going to see the stage sequence, of the model of homeostatic hierarchical integration is concerned about higher orders of complexity – where similar to Commons (2007) criteria for stage

growth – communicative actions at each tier a) are defined as adopting a new function to the themes of lower order hierarchically complex tiers and b) differentiate from them, in the sense of organizing and transforming the lower-order communications, each tier c) “produces organizations of lower-order actions that are new and not arbitrary, and cannot be accomplished by those lower-order actions alone” (Commons 2007 p.1) and therefore “unserious offers” should only be able to complicate assessment and not outwit the scoring logic. Figure 7 shows how, in a contextual translation of Piaget’s (1980, p.103) words in *Adaptation and Intelligence*, the equilibration within a self across tiers “no longer appears to be of a nature distinct from the equilibrium between the organism and its environment, but, on the contrary, as the ultimate realization of harmony sought at every level” – a harmony that is gained by adding a new genuineness, a new media and subsystem of the whole is enabled; and once “these subsystems are coordinated among themselves, with no further conflict or contradiction, then an encompassing overall system will sooner or later take shape around them” (ibid. p.108). This new overall and genuine totality therefore needs four stages et each tier.

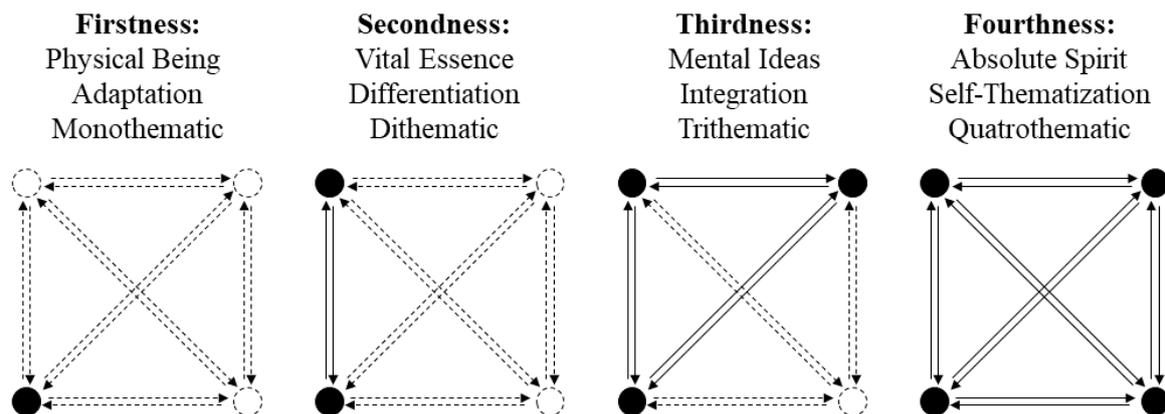


Figure 7: The Structures and Functions of the Four Homeostatic Tiers with their Genuine (Black) and Degenerate (Dotted) Aspects

### 2.2.2. Rhemes and Stages

Like for Kurt Fischer (1980) the progressions through the levels of homeostatic hierarchical integration show a repetitive cycle at each tier that contains four levels, which concomitantly to a fractal nature of the homeostat again are adaptative, differentiating, integrative and self-thematizing. However, they, too, form combinations that “define the possible relations between sets within a skill” (Fischer 1980, p.486). Since for Fischer (1980, p.481) the “sources for variation are denoted in the theory by sets” and sets are combined within each cycle from being single, towards mappings, systems and systems of systems a “person can modulate or govern sources of variation in what he or she does or thinks” (ibid. p.481). But, if increasing complexity, this each time follows the same sequence that enables a skill which

basically is the integration of the “environment as well as the organism” (ibid. p.482). Skills are more or less the accidental aspect that are arising on the basis of media and form. Both Fischer and Commons here merely define later stages as the coordination of these sets or respectively that of lower order operations. We additionally assume that this follows the structure of the whole. The homeostasis enables this coordination specifically by adding a new structure and function, a *rheme* which like a skill that is an action structure directs a new mode of communication to successively enact the complete theme of a tier. As we might remember: “the part in which the theme is developed, is called [...] the rheme” (Halliday 2004, p.64).

A rheme is coordinating, at a certain stage, the skills as symbolic-syntactic, lexical-conceptual and as sets, cognitive modes that make a certain field of pointing visible, tangible, tasteable and so forth, which means real. The four transformations throughout each tier that resemble single sets, mappings, systems and systems of systems are based on Luhmann’s posthumously published book *Organization and Decision* (2000), where he mentions a series of specific logical ways to deal with the duality created by a coding. A coding becomes possible on the basis of the already mentioned Yes/No bifurcation, when “the system through communicative coding is doubling all possibilities to state something” (Luhmann 2012, p.602). It for example allows to assign something exclusively to the organism or conversely exclusively to the environment and on basis of this first distinction one starts to think about it in terms of “either... or”, “both... and”, as well as “both... and... and the relationship of both sides of this both... and”, which is a synthesis. As Gilles Deleuze and Felix Guattari (2005, p.7) accentuate “semiotic chains of every nature are connected to very diverse modes of coding (biological, political, economic, etc.) that bring into play not only different regimes of signs but also states of things of differing status”, which, mostly unknowingly, sustain the invisible structures and functions of homeostasis within our point of view.

The coding allows the homeostatic forms, for example the Ego, to selectively gate their attention and test for functional fit, selection, variation, integration, negation and so forth on the bases of the variety experience founded on the preceding attenuation or amplification. And thus, sustains the substance of homeostasis, the medium. Otherwise put: “Forms imply a code, modes of coding and decoding. Substances as formed matters refer to territorialities and degrees of territorialization and deterritorialization. But each articulation has a code and a territoriality; therefore, each possesses both form and substance” (Deleuze & Guattari 2005, p.41).

Luhmann (2000) explicates coding by means of the difference between formal and informal organization, where the logically sound first step is the recognition that one side of the

coding is not the other ( $A|B$ ) or both are the same, or from another side: one is merely reduced to the other ( $A = B$ ) – Piaget’s identical transformation or a single set as *adaptation*. After the first dichotomy, a second viewpoint allows to exclusively orient through an either formal or informal ( $A \vee B$ ) and the organizational procedures sort events into these categories. A univariate relation arises which easily leads to the subordination of the one under the other, where either the formal or informal is superior or at least earlier to its opposite ( $A \rightarrow B$ ) – a form of an inverse transformation or negation and thus *differentiation* that allows a mapping as “a structure relating two sets: a collection of ordered pairs in which the first member in each pair is from one set ( $W$ ) and the second member is from another set ( $X$ )” (Fischer 1980, p.486). As a third after the second, where “opposites had been formulated, where depending on circumstances one or the other side appeared as worthy of promotion [...], where groups took on the appearance of formatting cliques” (Luhmann 2000, pp.303f), comes the recognition that there can be “as well formal as informal organization” (ibid. p.303), a “both... and” ( $A \wedge B$ ) approach in relationship to organization. This, too, can be the recognition of the inherent interactions, interconnections and thus the necessity for reciprocal transformation or *integration* of both sides ( $A \leftrightarrow B$ ) beyond univariate relations. This means, we deal with what Fischer calls systems that “arise when an individual is able to bring together two lower-level mappings into a single, seamless skill” (Mascalo & Fischer 2010, p.157).

After this third, a system coordinated through a function of thirdness, a fourth mode an organizational system can be “depicted as basically bi-resilience” (Luhmann 2000, p.304) as unity that is “autopoietic and the construction of the system with one operation” (ibid. p.304), a correlative transformation, which is basically both sides of the coding and their relationship to each other, a oneness ( $A \cap B$ ), that at the same time maintains itself within this relationship through being both: what it is and what it is not ( $A = \neg A$ ). Here both sides are equally important and can only exist in being co-subordinated to each other or in a permanent shift – caused by the linearity of language – to reference both. It is a “both... and” of a more intricate kind, or as Cook-Greuter (2010, p.77) writes about the movement to the last stage of our third tier: “at the Autonomous stage the identification with polar opposites is still sequential [...] [, while] in contrast [at the Construct-Aware stage], the same dichotomy can be integrated, and non-defensively appreciated as two sides of the same coin”.

Too, in a certain sense, a system of systems arises “through the process of coordinating two or more systems level skills into a single integrated skill” (Mascalo & Fischer 2010, p.158) at this *self-thematizing* stage. However, within the model of homeostatic hierarchical integration through communication the system of systems only constitutes the final level of a

tier's growth cycle. A system of systems is not simultaneously "the equivalent of the first level of the next broad tier of development" (ibid. p.158). Rather there follows a Turyatita: a Vedic term that simply means "beyond the fourth" and is often simply referred to as "ultimate unity consciousness" (Wilber 2017, p.87). Pure nondual consciousness "the union of emptiness and all form, the collapse of the witnessing self, or true seer, into everything that is seen, the result being a pure, selfless, ultimate nondual state of pure suchness, thusness or isness, a union of finite and infinite, subject and object, [...] or soul and god in godhead" (ibid. p.87). Differently said a new firstness or adaptation that "most of all in this way [is] that absolute spirit (which is revealed as the concrete and supreme truth of all being) [that] comes to be known, as at the end of the development it freely externalizes itself, letting itself go into the shape of an immediate being – resolving itself into the creation of a world which contains all that fell within the development preceding that result and which, through this reversal of position with its beginning, is converted into something dependent on the result as principle" (Hegel 2010, p.49). The fourth of the earlier tier experienced as first and being of the next tier that at first as Evelin Underhill (1911, p.164) states "entails the abrupt or gradual emergence of intuitions from below the threshold, the consequent remaking of the field of consciousness, an alteration in the self's attitude to the world" – the phenomenon of presencing we already described – that then becomes "the awakening of the transcendental consciousness" (ibid. p.164). Luhmann (2012, p.61) here points towards the recognition that "each observation has to use a scheme of differences, whereby the unity of differences is constituted in the observing, and not within the observed system". Reality moves from solid and self-maintaining objects at the earlier tier towards the "management of distinctions", vicarious for adaptation, goal-orientation, integration and self-thematization, where "self-observation generates an artificial difference between system and environment which constitutes itself, with an operative moment of autopoiesis, where the reproduction of elements has to ensure that the elements are reproduced as parts of the system and not as something else" (ibid. p.63).

However, the sequence – though defined similarly – does not completely overlap with the territory which it is matched to in Fischer's (1980) *Dynamic Skill Theory*. As pointed out in *Luhmann's Life Work and Tier Patterns* the application of the homeostatic functions can easily lead to misallocations (Angerer 2020). Because, generally there are at least two options to apply the functions of homeostasis firstly for the sake of self-inquiry and self-thematization of homeostasis itself and secondly towards any object but itself. Since each structure stage is necessarily conditioned by the homeostat, each statement projects out the media within the forms and accidentals, applying these patterns is for free, effortlessly and naturally unfolding.

Yet, as Korzybski (2000, p.61) writes in his *Non-Aristotelian Systems and General Semantics* to expand his famous dictum, that maps are not the actual territory: the “only possible link between the objective world and the linguistic world is found in structure and structure alone. The only usefulness of a map or a language depends on the similarity of structure between the empirical world and the map-language”. But if not all four functions of homeostasis have been enacted in their genuine form, which supposedly only happens on one of the very last stages of human development, the application towards the territory, that is predefined by themselves has to fail naturally as a baby will fail in seeing colors beyond shades of black and white and intense red, since the colors we see are courtesy of cells in our eyes’ retinas called cones and we are simply born with under-developed cones and still-developing brains. As Maturana (1990, p.182f) states “everything that is happening in a living system, in the factual operations of its elements’ properties, [...] operates solely in the present that is, it is determined by the structures, which it possesses in the moment of its structural self-realization”.

Like Korzybski (2000, p.61) who stresses that a mismatch between map and territory “in serious human life problems, must always become eminently harmful”, we hypothesize that in fact assessment on basis of the misallocation of homeostatic functions only works through the creation of perceptual biases and only up to a certain stage after which a deterioration of the original territory sets in. This relates to a crucial distinction Zachary Stein (2019), one of the main applicants of dynamic skill theory introduces in his ideas on *Ethics and New Education*; namely that between *designing* and *raising*. On the level of form, of course, each model is designing a conditioned surface that competes for attention, but at a deeper level misallocation can lead similar to the late capitalist structure Stein (2019, p.133) criticizes to “auto-transformation of the human nervous system, in which educational configurations are altering children’s [and adult’s] brains” that can lead to an “unjust situation in which individuals are rendered incapable of taking responsibility for their own lives, denied the autonomous pursuit of self-chosen conception of the good, and thus denied the freedom and self-respect typically given to responsible humans” (ibid. p.133), that respectively is preconditioned by the homeostatic media and their transcendental reality. As an extreme example for consequences resulting from misallocation, the famous psychoanalytic and expert in child development Margaret Mahler and her colleagues (2000, p.11) write in the *Psychological Birth of the Human Infant* “the normal separation-individuation is the first crucial prerequisite for the development and maintenance of the ‘sense of identity’” and the maladaptation to the child’s need in this sensitive period by caregivers can lead to “the psychotic child [that] never attains a feeling of wholeness, of individual entity, let alone ‘a sense of human identity’” (ibid. p.11).

### 2.2.2.1. The Monothematic Stages of Firstness

Admittedly the logic proposed by Luhmann must be different for each tier. In the same way as one can conceptualize Piaget's and Inhelder's reciprocal transformation as a degenerate version of integration, since it includes no thirdness or mediation, the logic at the first tier can hardly include reciprocation if there is neither subject nor object since both are still fused not separated. Nevertheless, one can still carve out these logics or structures and the respective functions of homeostasis. Mahler and colleagues (2000, p.44) mention for example that the infant first lives "within the orbit of omnipotent symbiotic dual unity" with the caregiver, which resembles  $A|B$ . This stage is followed by the "first sub-phase of separation-individuation, namely differentiation" (ibid. p.52) that then is surpassed by a form of reciprocity and integration where enabled through the "spurt in autonomous functions, such as cognition, but especially upright locomotion, the 'love affair with the world' begins" (ibid. p.70). Approximately at the same age the infant according to Piaget (1956, p.184) develops triadic structure of spatial, causal and temporal relation between two 'objects'. Before this, at his third stage, there is only "a simple practical relationship" between an act and a result observe like a baby hitting a toy and watching it swing. "It is during the fourth stage", Piaget (1956, p.1984) resumes, that, "with the coordination of the secondary schemata and the implications which result, these relations [of time, space and causality] begin to become objectified, with the sole disadvantage of not being really objectified until the fifth stage". And according to Luhmann (2018a, p.430) adaptation resides within the temporal domain, since it is, from an evolutionary point of view, neither graspable "as something 'solid' in difference to something that is 'flowing', nor abstract or independent of time". Too, it is followed by the problems of spatialization, the factual dimension that includes central problems of collective action based on the need for differentiation of a landscape built from differential systems and environments including a system's "specific contacts towards the environment – as restrictions and extensions of the general situatedness of the system within the environment – [...] which work as threshold within the evolution of higher order complexity" (Luhmann 2012, p.270). Piaget's (1956, p.211) fourth and fifth stage then are explicitly defined as to "put things in relationship to each other" and integrating "the external environment and no longer only to the body itself" (ibid. 210), thus expressing an early version of social reciprocation as Mahler's and colleagues (2000, p.71) infant does when during the practicing phase where the "child's great narcissistic investment" is both directed in "his own functions, his own body, as well as in the objects and objectives of his expanding reality" (ibid. p.71). The last stage of our first conceptualized tier, the physical being, begins with Mahler's and colleagues' (2000, p.76) *rapprochement*,

where self-thematization makes the infant more aware of “his physical separateness”. Here, similar to the Construct-Aware stage or moral stage six, the focus is on two sides of a coin, both self and other: “as the toddler’s awareness of separateness grows [...] he seems to have an increased need, a wish for mother to share with him every one of his new skills and experiences, as well as a great need for the object’s love”, so Mahler (ibid. p.76f). And this distinguishes it from the mere narcissistic stance at the earlier stage that is often, correlated with moral stage 5, too. Ken Wilber’s (2017) *green* and *teal* altitudes where earlier through deconstruction generates nothing but “nihilism and narcissism” and later in a felling of its “leading-edge nature feeds into a self-reflection that thus can reactivate narcissistic tendencies” (ibid. p.337) similarly to the child’s – of course comparatively degenerate – rapprochement recognition that its wishes not always coincide with that of the caretaker is there comes a realization that “greatly challenges the feeling of grandeur and omnipotence of the practicing period” (Mahler et al. 2000, p.90). The moral stage six individual respectively is “forced to empathize with all possible positions and perspective of a society’s members in the sense of complete reversible ‘role taking’” (Apel p.336). This position supersedes the necessity of moral stage five where still a conflict “between the legalistic structure of societies and the ‘moral point of view’ exists; the individual thus emphasizes the right of the own subjective conscience since it is unable to invoke an intersubjectively valid principle” (ibid. p.322) or as Hegel (2011, §509) writes in his critique of morality in comparison to the ethical life: “it is part of its being to be abstract certainty of itself, abstract reflection of the freedom in himself. [...] Therefore, the good is established as a contingency for the subject”. Finally, the movement out of rapprochement is consolidation the individuality with “a far reaching structuralization of the ego, [...] characterized by unfolding of complex cognitive functions verbal communication, fantasy, and reality testing” (Mahler et al. 2000, p.109 & p.117) that lead to object constancy. This means secondness or Hegel’s (2010, §115) *Essence* “which shines in itself or is a pure reflection, therefore it is only relationship to itself, not immediate, but as reflexive – Identity with itself”.

Besides this completion of firstness in four thematic steps, there is a development of the communicative act, too. As said, the first relates to the field of pointing and in Habermasian (1982, p.239) terms the constative speech act where “both parties enter the level of experiences and issues, which built the content of the conversation”. In Austin’s (1962, p.108) *Speech Act Theory* this firstness is an abstraction from but basically the outcome of the locutionary act, “which is roughly equivalent to uttering a certain sentence with a certain sense and reference, which again is roughly equivalent to ‘meaning’”. The understandability of statements

herby follows an according stage sequence that is strongly dependent on physiological and anatomic development. Simply said it moves from cooing sounds and syllable-like utterances that can seem like phonemes typical for babies up to Piaget's third, i.e. secondary circular reactions (Ingram 1998) towards babbling, morphemes and single words, the already mentioned monoremic expressions at Piaget's sixth stage. Hereby the words follow "the principle of 'distancing', that is, in terms of an increasing differentiation between the properties of the vocal utterances and the properties of the presented events they depict" (Kaplan & Werner 1963, p.100), which are first naturalistic-onomatopoetic or physiognomic depictions before moving into the lexical-conceptual realm within secondness. Piaget's (1956, p.264) fourth stage, "in so far as it is defined by the commencement of the coordination of schemata, appears more as a phase of initiation or of gestation than as a period of realization or accomplishment", first gives rise to the imitation of new sounds expressed which grow in the naturalistic depictions as imitations of sounds and shapes, "which will be essential for the acquisition of the adult language" (Ingram 1998, p.120). Figure 8 shows the monothematic expression for one onomatopoetic imitation of a natural sound namely, a German child if asked to say "dog" between one and two years of age might respond with a "Wau-Wau", which analytically reveals a monothematic-quatorrhematic form that evolved along the first four stages of homeostatic hierarchical integration: "[Theme One [Rheme One W] [Theme Two au] - [Rheme Three W][Rheme Four au]]".

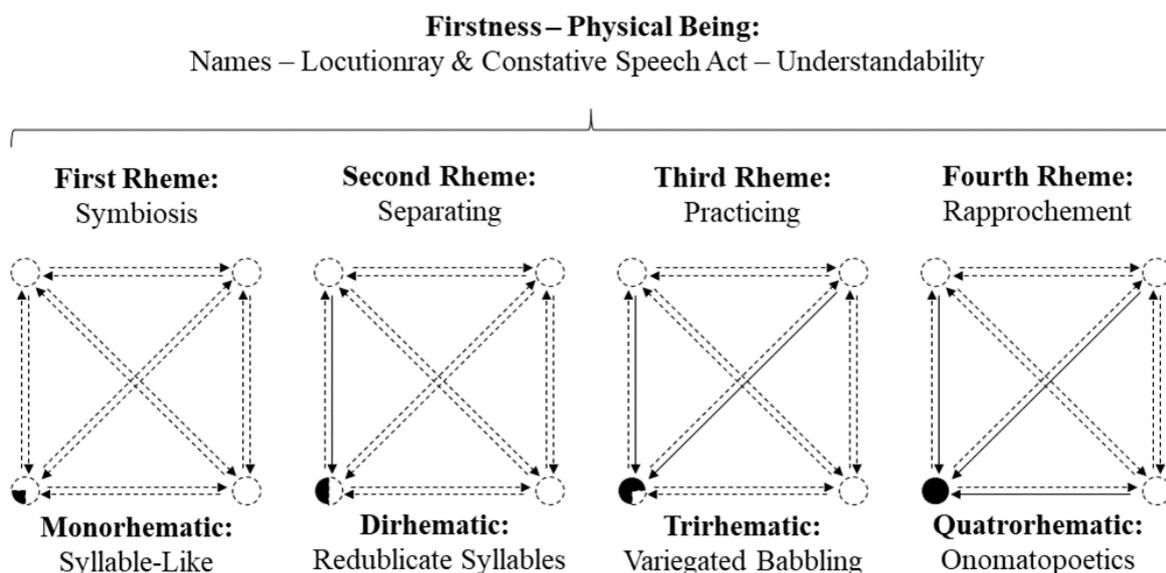


Figure 8: The Four Rhemes of Firstness and the Arising of Monothematic Expressions

#### 2.2.2.2. The Dithematic Stages of Secondness

So, if the first tier develops the functions of locutionary speech and the constative act of communication we will find the performance of *illocutionary acts* "such as informing, order-

ing, warning, undertaking, &c., i.e. utterances which have a certain conventional force” (Austin 1962, p.108). Through this illocutionary act, so Habermas 1982, p.257) the “societal reality of behavioral norms and values” enters the speech act, “the communicative action has to fit into an accepted normative context” (ibid. p.245), which, too, includes the lexical-conceptual field of terminology and the traditioned and normed definitions of word meaning. Already with Peirce (1998, p.5) we pointed towards the experiential fact that when one reaches thirdness, one judges that “in the second there was only a sense of brute force”, one that is concomitantly contained in utterances through their cultural and normative background. While at firstness this force in degenerate form “such as turning towards the presented content or pointing to it” created indexical force “at the two-vocable level, one finds that the deixis [or indexical pointing] is represented by demonstrative vocal forms, for example ‘da’ or ‘ta’” (Werner & Kaplan 1963, p.161) – illocution becomes a genuine communicative performance.

Claude Levi-Straus (1963, p.193) in his *Structural Anthropology* points to a transition where the lexical-conceptual field moves “from the most prosaic reality to myth, from the physical universe to the physiological universe, from the external world to the internal body”. Here the “myth being enacted in the internal body must retain throughout the vividness and the character of lived experience”. It is a movement finally coinciding with James Fowler’s (1981, p.149) *mythic literal* faith “the stake in which the person takes on for him- or herself the stories, believes and observances that symbolize belonging to his or her community”. Fowler’s stage examples in part reveal the culmination grammar within the fourth stage of the vital essences’ tier, though some examples from older persons reach up into our thirdness. One example for the culmination of the second tier is Millie, a fourth grader from a Protestant family, that responds to the question “how god could know what is best”. For her god is alike one’s parents: “[Theme Two [Rheme One They think they know] [Rheme Two what is best for you]] [Theme Two [Rheme Three and they try to do] [Rheme Four what they think is right]]” (Fowler, 1981, p.141).

We find a movement towards the same structure in the tribal myths Levi-Straus (1963, p.157) derives his insights from however, here for example the myth of coyote-girl and her husband who told each other they would have four children, two girls and two boys where *kikua* means of water and *tunuka* of land. only include three rhemes, hence “[Theme Two [Rheme One coyote named]] [Theme One [Rheme Two one of the male children Tunuka] [Rheme Three and one of the female children Kikua.]] [Theme Two [Rheme One The other male child] [Theme One [Rheme One he named Kikua] [Rheme Three and the other female Tunuka.]] [Theme Two [Rheme One Coyote thus made the moieties]] [Theme One [Rheme Two and gave people] [Rheme Three their first names]]”. As Levi-

Straus (1963, p.211) writes the movement into this form of mythic reasoning or the use of “mythemes” completed a movement into triadic societal structures, a lexical-conceptual “both... and” projection into the concrete world. It “brings about a rearrangement of [...] clans into three endogamous classes [...] [that] embraces oppositions between male and female, celibacy and marriage, sacred and profane” (ibid. p.147). The upper mythology then creates something like depicted in Figure 9 where the sky, holds both land and water and within their architecture “a circle, which coincides with the perimeter of the village, encompasses the whole, making it a residential unit” (ibid. p.155) and according to the definition of concrete operations the shared self extends “to models that appear in written or spoken stories” (Miller & Lee 2007b, p.9).

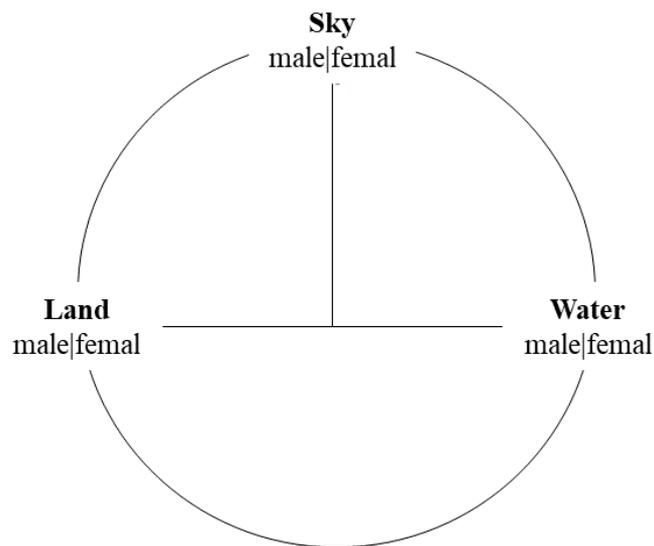


Figure 9: Triadic Structure at the Third Stage of Secondness in Tribal Mythemes

As the Jewish philosopher and biblical scholar Friedrich Weinreb (2011) writes in *Number, Sign, Form* the concrete passages of the Tora, i.e. the Old Testament, are full of series of three with a final fourth. Here, the creation story of the genesis can be structured as a series “where development from the first over the second to the third day fulfills itself” (Weinreb 2011, p.50). The fourth, fifth and sixth day give rise to the accidentals of the substances created on the first three days and are their own series. All culminates in the seventh day – which is the fourth of both series – where both happens “God ended his work which he had made; and he rested on the seventh day from all his work which he had made” (Gen 2,2) – a concrete Form of latent pattern maintenance one might say with two opposite unified as “ending”, which sometimes is translated as “finishing”, and “resting”. According to the tribal mythemes, the third day and the third in many stories of the old testament is the position where a “both... and...” comes into play which “binds the earlier into a cycle” (Weinreb 2011, p.51), so, too, is the third and last of the patriarchs both “Jacob and Israel” (ibid. p.51).

Too, “the logic of myth confronts us with a double, reciprocal exchange of functions” (Levi-Straus 1963, p.227) where again, space, time and a third come together, like they did at Piaget’s fourth stage, the coordination of secondary schemata. It is here, that comparison arises and supersedes the development of pronouns like I, me, mine, yours, theirs and so on, as well as that of conjunctions indicating addition, causality or exclusion and an early form of “social self emerges from the interrelated processes of social categorization and social comparison: Individuals first organize the world into discrete categories, emphasizing the differences between and similarities within social groups, and then evaluate or attribute meaning to these categorizations” (Rogers et al. 2012, p.100), a perspective taking by which “the perspective of the other is discriminated by considering how one’s own behavior will affect another’s behavior, the other person’s behavior possibly reinforcing one’s own” (Miller & Lee 2007b, p.9), named concrete operational like in this statement comparing physical appearance as sign of affiliation where a Chinese American girl in the second grade states that being Chinese means “[Theme Two [Rheme One mostly to have black hair,] [Theme One [Rheme Two and different skin] [Rheme Three than black or white people]]” (Rogers et al. 2012, p.102).

When we dissect Piaget’s and Inhelder’s (1958, p.9) concrete operations where children in the plunger game “establish a correspondence between the slope or direction of the plunger and consequently of the first segment of the ball’s trajectory and the inclinations or directions of the second segment”, *substage B* shows some major version of a dithematic-trithematic reasoning that almost resembles the use *quatorrhematic* grammar: “[Theme Two [Rheme One The more the plunger] [Rheme Two is (inclined, etc.),] [Theme One [Rheme Three the more the ball][Rheme Four will go (downwards, etc.)]]” (ibid. p.9). Distinctly *substage A* uses in general *trirhematic* like in the statement “[Theme Two [Rheme One the ball will go there] [Theme Two [Rheme Two because the plunger] [Rheme Three is tilted more;] [Theme Two [Rheme One I put my eyes high up] [Theme One [Rheme Two and from the rubber I look] [Rheme Three at the round pieces]]” (ibid. p.7). Basically, the *dithematic-trirhematic* structure enables a reciprocal reasoning that can for example isolate an effect like “the ball will go there” and create a correspondence between two other rhemes that are combined as “both... and” in the second theme like “being plunger” and “being tilted” – which is both disjunctive and comparative. In contradiction at Piaget’s and Inhelder’s (1958, p.6) pre-operation stage a *dithematic-dirhematic* structure that can only cre-

ate cause and effect. The statement “[Theme Two [Rheme One The ball hits there,] [Theme One [Rheme Two then goes over there]”. Or as they state “as a result of their internalized and integrated nature concrete operations are actions accompanied by an awareness of the part of the subject of the techniques and coordinations of his own behavior. [...] Those characteristics [are] not found at this first stage: the subject acts only with a view toward achieving the goal; he does not ask himself why he succeeds” (Piaget & Inhelder 1958, p.6). Fowler’s (1981, p.133) *Intuitive-Projective* faith somewhat matches this preoperational phase, and describes it as the “fantasy filled imitative phase, in which the child can be powerfully and permanently influenced by examples, moods, actions and stories of the visible faith of primarily related adults”, where a lack of comparative abilities fixes a cognitive egocentrism, where dialogs “have the character of dual monologue, each [person] speaking in a way that assumes identity of interest, experience and perception” (ibid. p-123). However, here, too, in an Interview with Freddy, when this six-year-old child is asked how he know that something is bad answers “[Theme One [Rheme One Cause my mother gets upset]] [Theme Two [Rheme Two and then she starts spanking] [Rheme Three and she starts screaming]]” (ibid. p.125) we find a structure that in the model of homeostatic hierarchical integration describes the entering of the third stage of secondness.

Below the preoperational stage we can find another that Commons (2007) calls the sentential where first noun plus noun utterances are created, where the child “builds a combinatory name composed of the idiomatic plus the conventional word: wau wau-dog, bah-sheep; muh uh-cow” (Kaplan & Werner 1963, p.108) before “sentences show emerging evidence for both ‘subject + verb’ and ‘verb + object’ relations” (Ingram 1998, p.274). Those *dithematic-monorhematic* two-word sentences like “[Rheme One [Theme One: Verb go] [Theme Two: Object Mummy]]” eventually grow into four- to five-word sentences. Because of the similarity to telegrams it is the so called telegraphic phase But this is true for an earlier stage, too, which creates sentences as complex as “[Rheme One [Theme One: Subject an apple] [Theme Two: Object on the table]” (Ranti 2015, p.105) correlating with the *Impulsive* stage as depicted in Hy and Loevinger’s (2014) *Measuring Ego-Development*, the stage where cognitive development allows people to “verbalize about what they like and want” (Miller & Lee 2007, p.8) which are “signs of the beginning use of language simultaneously with the emerging ego” (Cook-Greuter 2013, p.23).

**Secondness – Vital Essence:**  
Indexes – Illocutionary & Regulative Speech Act – Accepted Truth

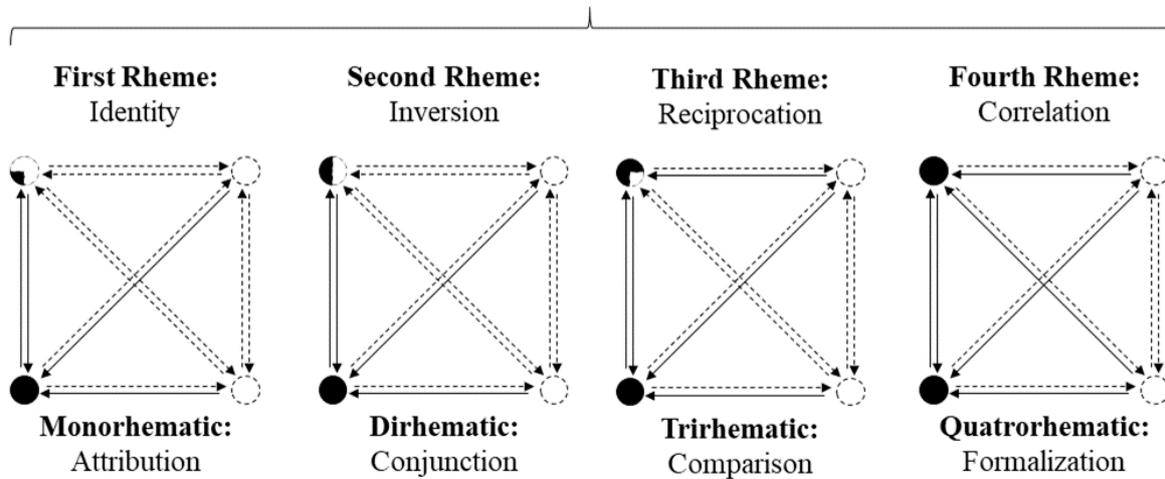


Figure 10: The Four Themes of Secondness and the Arising of Dithematic Expressions

When we compare the stage sequence of homeostatic hierarchical integration through communicative action with the stage sequence depicted by Commons (2008) in his *Model of Hierarchical Complexity* we might recognize that his sequence up to his early formal, the abstract stage, creates five stages. According to him “the Model of Hierarchical Complexity is a mathematical theory of the ideal. It is a perfect form as Plato would have described it” (Commons 2008, p.315) while he admits, that though “there cannot be any other stages other than the 14 we have proposed except for ones beyond 14 [...] [, we] may have an error in the lowest stages, however” (Commons & Miller 2001, p.231). Given Commons and colleagues (2005) manual on *how to Score Anything* both, the preoperational and primary stage statements in an example of bathtub-water logic look like this: the preoperational statement says that “[Rheme One [Theme Two the water is filling] [Theme One the bathtub]]” while the primary says “[Theme Two [Rheme One the water is filling the bathtub ]] [Theme One [Rheme Two so I can take a bath]]”.

Hence, the preoperational stage in Commons’s conception of hierarchical complexity falls into the same category as the sentential in our conception of homeostatic integration. Both exhibit some sort of dithematic-monorhematic grammar however, the bathtub example shows a structure that is specific for late phase statements as we are going to show under the header *Syntax and Phases*. It contains a so-called auxiliary verb, a verb that adds functional meaning like tense or modality to a statement by accompanying the main verb like the “is” is adding present tense to the main verb “filling”. As David Ingram (1989, p.457) writes, an awareness of the auxiliary function only comes up after the third year including allowing that a child “correctly imitated it in grammatical sentences, and changed ungrammatical ones to be

grammatical, either by deletion (of the auxiliary or tense on the verb) or by reordering”. However, the correlation with Common’s model in Figure 1 might be skewed since much of the allocation to a thematic-rhematic structure is based on interpretation and hence we might include a mistake here. For example, as depicted later instrumental and locative grammar are signifiers for a second half of a stage but according to Ingram (1989, p.279) some two-word sentences are locative where for example “the relation is object-state-place” like in “I sitting”. However, he (ibid. p.328) himself states that it might be that “locative would not be generated [...] at that point in development” and the basic overall structure here much more resembles the homeostatic functions of a first quarter as outlines soon: a sort of nominal syntax with an intransitive verb, where the locative is not essential to the meaning but only subordinate or accidental.

### 2.2.2.3. The Trithematic Stages of Thirdness

The third component in Austin’s (1962, p.117) speech act theory is the *perlocutionary act* which “always have sequels rather than objects, namely those where there is no illocutionary formula”. Perlocutions to a certain extent supersede the conventional illocutionary act that is basically concerned about the uptake of an information that automatically and conditioned produces effects. As much as the perlocutionary act was criticized by Habermas (2016, p.394) since perlocutionary effects are best “described as states within the world, which have been achieved by interventions into the world. Illocutionary success is established on the level of interpersonal relationship” while a perlocution is most easily reduces the other since it is “a hidden strategic action” (ibid. p.395). However, if we understand communication in Luhmannian (2012) terms the uptake of a message hardly secures understanding. Understanding for him depends on problems based on Parsons’s (1962, p.16) idea of *double contingency* that is “inherent in interaction. [...] Communication, which is the precondition of cultural patterns, could not exist without both generalization from the particularity of the specific situations and stability of meaning which can only be assured by ‘conventions’ observed by both parties”, but while convention might exist, generalizations from the particular hardly coincide between two persons and being coextensive with each other remains in the realm of interpretation, hence contingency, based on experiences in the field of pointing and lexical-conceptual similarities.

Thirdness as the order of the unity between the duality of the accidental and the necessary has an inherent drive towards uncertainty that is based on freedom and interpretation. It moves communication away from conventional triviality towards a conscious effort, where double contingency enables dynamics communicative systems. These systems unite one or

more self-referential perspectives through their reciprocal insinuation of similar schemata of truth and meaning “a sufficient degree of transparency [or wisdom] for the intercourse with each other. They so to say create certainty about the reality, since insinuation leads to an insinuation of the insinuation within an alter ego” (Luhmann 2012, p.156f). As we already mentioned, the fourth stage of thirdness enables, in Karl Otto Apel’s (2016, S.114) terminology, “presuppositions, which in a transcendental-hermeneutical and transcendental-pragmatic sense are un-circumventable preconditions for the thinking of contingent premises for the possibility of understanding” – final substantiations which like the Kantian categorial imperative are acceptable for all participants within a system and discourse and foster complete and reversible role-taking.

Thirdness fundamentally is founded on truthfulness, the expressive and regulative speech act that is according to Habermas (2016, p.447f) dependent on esthetical and therapeutic critique that reveals the “knowledge of each and every actor’s own subjectivity and these values, which underlie the interpretation of needs, the reading of desires and emotional attitudes”, which are basic for intersubjective agreement and integration. The third tier ultimately as Kant (1987, p.88) writes in the *Critique of Pure Judgment* that as a “necessary condition of the universal communicability of our cognition” we need the ability for attunement and “this attunement itself, and hence also the feeling of it (when a presentation is given), must be universally communicable, while the universal communicability of a feeling presupposes a common sense”. This common sense as well as Karl Otto Apel’s and Jürgen Habermas’s ideas on Discourse supposedly are a degenerate version of fourthness which, in Wilber’s (2017, p.401) words “is the realization of the true Total Painting of All That Is, Including not only an unmanifest infinity and eternity at each and every point of the manifest total painting, but also a genuine total Total Painting, with nothing whatsoever left out of manifest existence, because the Supermind directly knows all of existence, in all of its levels and dimensions, by acquaintance, by identity, by being, and not merely by description, by naming, by describing”.

For Susanne Cook-Greuter (2013, p.76f) at this fourth and Construct-Aware stage “the search for an integrated, enduring self-identity is superseded by a more immediate, fluid and process-oriented self-view. It seems that the systems view of reality can give way to a more flexible, continuously deconstructing, non-reified notion of self in a rare transformation beyond it”. This process and discursive point of view called self-thematization in Luhmann’s work is compartmentalized out of four functions within most or all Construct-Aware thinkers. We have given several examples of these series in *Luhmann’s Lifework and Tier Patterns* (Angerer 2020). However, since the third tier of *mental ideas* can not yet use a quaternary

grammar statements are still triadic as was shown. If we take Hegel's utterance from above, where he writes that both good and evil "[Theme Three [Rheme One are purified into the unity] [Rheme Two in which there is no longer in them any existence devoid of self, any negative of consciousness,]] [Theme Two [Rheme Three where on the contrary, duty is the unchanging identical character of its self-knowledge,] [Theme One [Rheme Four and evil equally has its purpose in its being-within-itself, and its actuality in its utterance]]", we find a fourth rheme completing a *trithematic-quatrorhematic* structure. It thematizes self as, most probably, an expression of another category in Cook-Greuter's (2013, p.79) work that she calls an *Ego-Aware* subtype, people who "realize that the 'ego' has functioned both as a central processing unit for all incoming stimuli (ego as process) and as a central point of reference for self-identity formation (ego as representation)".

The *trithematic-trirhematic* stage seems to correspond to what Commons and colleagues (2005) explicated as being meta-systemic as in this example where a participant in an interview elaborates on good education and states about different societal knowledge-systems, that "[Theme Three [Rheme One all are theories that rest upon different ethical assumptions of what society is and what the role of law and society is and what either has achieved]] [Theme Two [Rheme Two which often blends into what people think it ought to achieve]] [Theme One [Rheme Three and people create their histories which are open to many interpretations which often, you know, consist of the way they think of what the society ought to be]]". As we can see here the interviewee mentions three different systems: he first starts out with "ethical assumptions", then he relates them to the thoughts of people about what systems "ought to achieve", before he finishes with the creation of "histories open to many interpretations".

Within this third stage the model of homeostatic hierarchical integration through communicative action fuses both the *Pluralist* and *Autonomous* stage of Ego, where the genuine version of thirdness is recognized: the earlier might belief "that it is impossible to defend any belief by proclaiming that all views are subjective and therefore legitimate since everything is relative" (Cook-Greuter 2013, p.59) – a point of view that if "carried to its logical extreme proclaims that no view or interpretation is better than any other" – while later can move to generativity, "the commitment to generate meaningful life for oneself through self-determination, self-actualization and self-definition" (Cook-Greuter 2010, p.57).

Both stages despite the more prominent ability of the Autonomous person to integrate "into a coherent new whole or core identity" (ibid. p.57), owed to expressing a mature second half point of view at this third stage of thirdness, express a "both... and" point of view. Hence a good boss at the Pluralist stage "[Theme Three [Rheme One ...both supports and challenges,]] [Theme

Two [Rheme Two uses a variety of supervisory methods and]] [Theme One [Rheme Three cherishes diversity]]” (Miniard 2002, p.65) might show up as a series of differential points of view while at the Autonomous stage it then [Theme Three [Rheme One has a clear sense of self and a vision of a future state – both]] [Theme Two [Rhema Two which are compatible with colleagues, co-workers and with the organization]] [Theme One [Rhema Three” and which are conveyed to others through example, not word]]” (ibid. p.70) reflects an integration of diverse perspectives into a mature definition of leadership, that can navigate them.

Though the third tier generally contains a lot of trinitarian thoughts the third stage as we already have seen with the tribal societies brings forth a lot of accidental triadic expression of the media and their forms. However, this time these trinities are mental ideas that often are sequentially or evolutionary order as in August Comte’s (1875) *law of the three stages* that describes the movement from theological, to metaphysical towards positivist or scientific mindsets, or Kohlberg’s (1964, p.406) early *Development of Moral Character and Moral Ideology* where he writes that “[Theme Three [Rheme One we can define a moral judgment as ‘moral’]] [Theme Two [Rheme Two without considering its content (the action judged)]] [Theme One [Rheme Three and without considering whether it agrees or not with our own judgments or standards]]” and based on this demarcates three tiers of maturation called premoral, morality of conventional role-conformity and morality of self-accepted moral principles. The “without” here as an important marker for the Autonomous person that helps both, become independent of the Pluralist or first half *trithematic-trirhematic* stage sensitivity to context or as in this sentence completion that says “[Theme Three [Rheme One a wife should be open to new experiences and people, slow to judge, intelligent]] [Theme Two [Rheme Two and able to overcome difficulties]] [Theme One [Rheme Three without allowing myself to become negative]]” (Hy & Loevinger 2014, p.230) to stabilize certain desired traits.

The triadic structure at the Achiever stage where on the sentence stem “a good boss...” the answer “[Rheme One [Theme Three now that I am one myself,]] [Rheme Two [Theme Two the role seems much more challenging than anticipated] [Theme One and my ideas of the role have changed since I became one]]” follows, shows, that the third theme does not contain new information. There is no third rheme, but a repetition of the earlier topics elaborated on. The person repeats “that his ideas about being a good boss have changed” and “that he became a boss”, there is no change in form but on the level of accidentals or simply wording. In the same way are the trinitarian views of Christianity do not actually coordinate the expressions of the divine as rhemes within one sentence but rather as single lexical-conceptual expressions. For example as stated by Saint Augustin of Hippo (1935, II, 4) in *On the Trinity* where he sets up to ac-

count about god to satisfy the importunately demand for understanding of the trinity within the narrow minded “[Rheme One [Theme Three that the Trinity is the one and only and true God,]] [Rheme Two [Theme Two and also how the Father, the Son, and the Holy Spirit are rightly said, believed, understood,] [Theme One to be of one and the same substance or essence]; [Rheme One [Theme Three in such wise that they may not fancy themselves mocked by excuses on our part,]] [Rheme Two [Theme Two but may find by actual trial, both that the highest good is that which is discerned by the most purified minds,] [Theme One and that for this reason it cannot be discerned or understood by themselves]”.

Again, in this mature exiting expression of the trithematic-trirhematic stage one can see how only two rhematic developments of the three themes take place. There is one mental idea elaborated by a second that oftentimes uses two themes, both of which state merely the same, whereas a Christian view at the third stage of thirdness can state for example that “[Theme Three [Rheme One to be the alpha and omega, Christ must become,]] [Theme Two [Rheme Two without losing his precise humanity,]] [Theme One [Rheme Three co-extensive with the physical expanse of time and space]]”, like Teilhard de Chardin (1971, p.91) does in a *Human Energy*. For de Chardin here, too, unfolds a triplicity, namely one of rules, where “by virtue of the third rule we discover the new idea of a moralization, to be understood as the indefinitely continuous discovery and conquest of the animate powers of the earth” (ibid. p.108) a morality of movement and evolution towards the integration into “unknown powers and unsuspected combinations” (ibid. p.108). As Wilber (2017, p.206) notes the *Teal* or “integral view sees itself as intrinsically interwoven with the entire universe, an interconnected, seamless, vital, living, creative, and conscious Kosmos” – it is driven by the perception of evolution into higher and higher wholes.

The trithematic-monorhematic stage accordingly can only see one mental idea however, this one idea can be a combination of three themes as in this statement at Commons’s formal operational stage: “[Rheme One [Theme Three I guess the main point would be] [Theme Two that someone else is important enough to you] [Theme One that they become a high priority in your life]]” (Miller & Lee 2007b, p.11). As Miller & Lee (2007b, p.11) point out, this formal stage statement about relationships mentions “relationships between two variables or propositions”. For them these statements “can often be discerned since they relate two abstract-stage entities” (ibid. p.11) however, we consider statements like this one as monorhematic since the first theme does not offer any information, while the second theme as well as the third create a tautology: “someone else being important” on the level of lexical-conception basically means that he or she is “high priority”. But, too, some of the statements scored at the abstract stage

via an assessment based on the model of hierarchical complexity fall into this stage, but rather in what is going to be defined as the entering into this stage within the model of homeostatic hierarchical integration. One example from Miller and Lee (2007b, p.11) is a comment of an interviewee on a loss as the result of a thievery. The interviewee states, the “[Rheme One [Theme Three he felt bad] [Theme Two but that was more a sense of] [Theme One of economic loss]]” wherein a mental idea is expressed through the abstraction of the emotions as an “economic loss”. Nevertheless, the whole sentence deals only with this one theme or idea of an emotion.

We find this stage for example expressed in Plato’s early writings. As we can see in his *Charmides*, an early dialogue about the meaning of prudence, we find no effect of two abstract ideas on each other like in Augustin’s writings, but for example when Plato (1835, 157 St.2 A) states that “[Rheme One [Theme Three the soul however, my friend,] [Theme Two is treated through certain conversations,] [Theme One and these conversations would be excellent conversations]]”, we can see that the abstract idea of soul is affected by a dithematic-quatorrhematic expression which however, again includes some form of tautology: “conversations that are a certain type of conversation”. In the same way Plato (1835, 160 St.2 B) moves on “[Rheme One [Theme Three in all things, both regarding the soul as well as the body,] [Rheme Two that appears as more beautiful wherein force and speed are shown,] [Rheme One than that wherein slowness and measuredness are shown]”, thus arguing for the more beautiful on the basis of to identical notions, in the sense of being logically exclusive.

Just some books later one can see a new thematization of Soul in Plato’s writings. In *Gorgias*, where the main character challenges ideas about the meaning and purpose of rhetoric, for example he lets Socrates speak: “[Rheme One [Theme Three I think namely,]] [Rheme Two [Theme Two who wants to conduct a complete examination of the soul, whether she lives right or not,] [Theme One has to have three kinds: insight, goodwill, and candor]” (Plato 1856, 487 ST.1 A). Thus, the soul is no longer the leading edge but now can be examined by a second stage of mental ideas that ultimately can coordinate several abstract traits and no longer is so much concerned about defining a single one as *Charmides* tried. Accordingly, most thinkers or philosophers at the Achiever stage propose not only soul, but a tautological layer of mentality and a more reasonable and insightful. We find this for example in Plato’s (2013) *analogy of the line* or in Thomas Aquinas (2015, p.325) reinterpretation of Aristotle, contained in *the Sum of Theology*, where “the reason is speculative and practical: and in both we find the apprehension of truth, and judgment concerning the truth”. But both of them work in different ways, the earlier by understanding and wisdom, the later by counsel and knowledge. This, too, means that the practical reason works on behalf of tautologies or Piagetian formal operations

since its “first precept of law is, that ‘good is to be done and pursued, and evil is to be avoided’” (Aquinas 2015, p.462). In a systematic stage statement from Miller and Lee (2007b, p.12) a 25-year-old female, too, starts to reflect on an earlier layer of her mentality however as she states “[Rheme One [Theme Three because I just graduated from college and I was sort of looking at,]] [Rheme Two [Theme Two my road maps had run out ] [Theme One and I was going to have to start making them myself]”, here the first layer are her life plans that are directly connected to the concrete like practical reason – the college and looking for a new path. Thomas Kuhn (1962, p.77) in *the Structure Of Scientific Revolutions* calls this second order of formal systems paradigms that with each decision to reject one “always simultaneously [include] the decision to accept another, and the judgment leading to that decision involves the comparison of both paradigms with nature and with each other”. A second order thirdness of inversion and differentiation that is placing data “in a new system of relations” (ibid. p.85) thus creating “a change in the visual gestalt” (ibid. p.85) that ideally asks for a third order comparison or integration that however, according to him is restricted through a threefold incommensurability of methodology, observation and different semantics. So to say he perceived the lack of complete reversible role-taking of the metasystemic stage – the lack of the mental correlative function again as at the Piaget’s and Inhelder’s (1958) concrete operational stage goes along with an inability to coordinate both inversion and reciprocation and “the transition between competing paradigms can not be made a step at a time, forced by logic and neutral experience. Like the gestalt switch, it must occur all at once or not at all” (Kuhn 1962, p.150).

Nevertheless, thirdness, like secondness within the realm of vital essences, develops from one mental aspect like the soul, towards two forms of reason into triplicities; and since “to select selections chained into three stages through selective behavior presupposes the constitution of meaning”, so Luhmann (2017a, p.150f) further to include a fourth. Because, “only on the basis of meaning that is perpetuated, informal identity and information bearing behavior can become differentiable and reciprocally referenceable [...], thus applicable towards integrative purpose”, and give rise to the structure of the whole. This fourth, the discourse, the ethical life, the complete reversible role-taking or a commonsense is “the constitution of meaning, a communicative process that is driving evolution” (ibid. p.151) as the accidental expressions of homeostatic hierarchical integration that according to Alfred North Whitehead (1978, p.354).ends within a fourth where “the creative action completes itself” and therefore “the kingdom of heaven is with [...], the love of God for the world”. Figure 11 depicts the movement through the third and thus integrative tier of mental ideas that at its final stage might give rise to “experience moments of freedom from the ego’s constant efforts at control

and self-affirmation” (Cook-Greuter 2013, p.82). One passage from Jacques Derrida illustrates this increasing ability to “escape the inevitable contradictions and infinite loops created in the rational, representational domain” (Cook-Greuter 2000, p.12). Namely, in *Dissemination* Derrida (1981) writes that “discourses spring up regularly, engendered in the course of sequences that are themselves part of the quadrature of the text, belonging precisely to one of the four faces, the one that seems to be open for the perception of the spectacle [or adaptation], for the ‘now’ of consciousness faced with its object [or goal-orientation], for the present tense of discourse [or integration] – belonging, in a word, to the face as what one faces, a surface of envisaged presence [or self-thematization]. This face also contemplates itself as the originary, immediate, unconditioned opening of appearing but it explains itself as an apparent opening, a conditioned product, a surface effect” (Derrida 1981, p.299), therefore still an “illusory” and degenerate appearing of Vijnana or gnosis however close to its genuine realization.

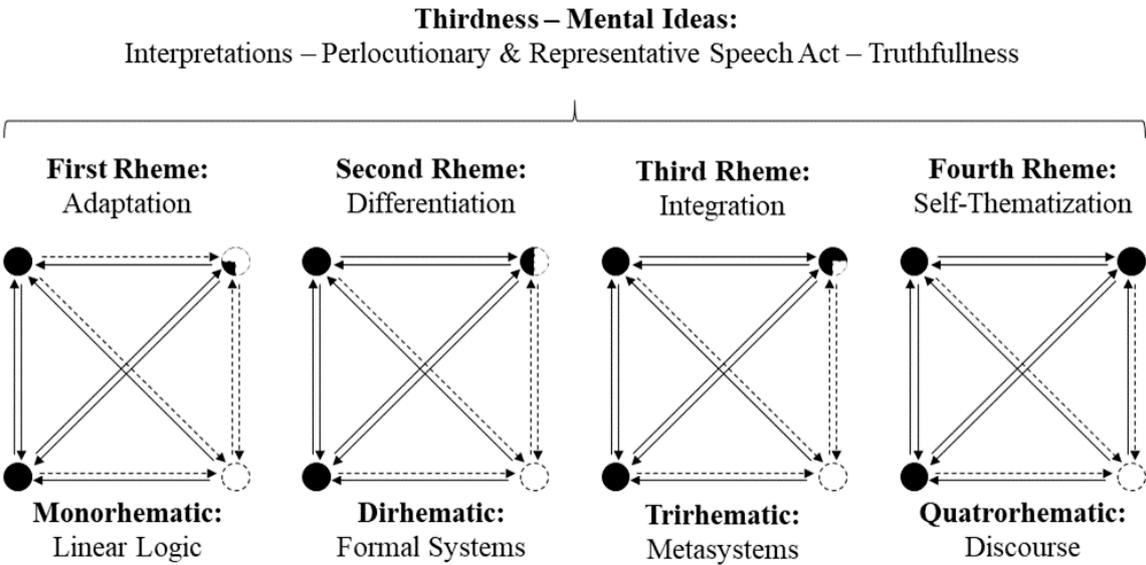


Figure 11: The Four Themes of Thirdness and the Arising of Trithematic Expressions

2.2.2.4. The Quatorrhematic Stages of Fourthness

Within Habermas’s work there is no explicate expression of fourthness as part of the speech act. It would be communicative action in-itself that represents fourthness. Closest to fourthness were terms like John Heron’s “oneness with a universal presence”, Kant’s common sense or we might simply use *intersubjectivity* “as the term for the communalities between subjects capable of speech and action, created for the comprehension of shared meaning and the acceptance of universal demands” (Habermas 1982, p.258). The term *interlocutionary* in a broad meaning, beyond interlocutors as participants of a speech act, as the interlocking of subjectivities through language and communicative action that is self-thematizing their com-

mon humanity and shared interiority here gives rise to something that Emile Durkheim (1915, p.444) in his *Elementary Forms of Religious Experience* calls “the collective consciousness [which] is the highest form of the psychic life, since it is the consciousness of the consciousnesses. Being placed outside of and above individual and local contingencies, it sees things only in their permanent and essential aspects, which it crystallizes into communicable ideas”, within each individual consciousness.

This place that “at every moment of time, embraces all known reality” (ibid. p.444) might be definable as genuine fourthness within its quathematic-quathematic expression through Aurobindo (2005, p.1046) when he says that the “[Theme Four [Rheme One nature of the gnosis would evidently determine all the relations of the life or group-life of gnostic beings;]] [Theme Three [Rheme Two for a gnostic collectivity would be a collective soul-power of the Truth-consciousness,]] [Theme Two [Rheme Three even as the gnostic individual would be an individual soul power of it:]] [Theme One [Rheme Four it would have the same integration of life and action in unison, the same realized and conscious unity of being, the same spontaneity, intimate oneness-feeling, one and mutual truth-vision and truth-sense of self and each other, the same truth-action in the relation of each with each and all with all]”.

What we can see here, is the first three rhemes unfolding a paradox of the general “unity of the gnostic collectivity” and the particular “individual soul power”, while the fourth rheme secludes the single functions of this play according to all four tiers of homeostasis. By this Aurobindo (2005, p.1046) describes this “inevitability of the union of freedom and order [...] a freedom of the diverse play of the Infinite in divine souls, an order of the conscious unity of souls which is the law of the supramental Infinite” and supersedes a quathematic-trithematic structure; a third stage of fourthness syntax that can most probably be seen in Ken Wilber’s (2014, p.1278) work on a *Fourth Turning*. There he writes that “[Rheme One [Theme Four at least in relative truth,] [Theme Three Spirit in 1st person or Great ‘I’ (which we will discuss next), Spirit in 2nd person (or Great Thou), and Spirit in 3rd person (or Great ‘It’ or Thusness))] [Rheme Two [Theme Three are all reminders that Spirit can be found]] [Rheme Three [Theme One as the Ground and Nature of all dimensions in the Kosmos—of all 4 quadrants]]”. Here again, we can grasp the expression of a paradox and oneness, since spirit is the nature of relative truth. However, since there are only three rhemes within the statement, it lacks a synthesizing sentence. Such a sentence respectively can be found at the beginning auf Aurobindo’s description of the supramental – the structure of the whole is the “nature of the gnosis which would evidently determine all the relations of the life or group-life of gnostic beings”. Additionally,

Wilber includes only a seclusion of a triplicity not that of all four homeostatic media as forms and accidentals.

We, too, can seemingly find this third stage theme-rheme variation in Ervin Laszlo's (2014) *the Self-Actualizing Cosmos* a seeming higher iteration of Maslow's self-actualizing person which lived at third and integrative stage of thirdness instead of the cosmos of fourthness. There Laszlo states, that humans, [Rheme One [Theme Four like other living systems,] [Theme Three we need to maintain ourselves]] [Rheme Two [Theme Two in a dynamic state far from thermal and chemical equilibrium]] [Rheme Three [Theme one through the intake and processing of information, energy, and the quanta-based substances we regard as matter]" (Laszlo 2014, p.62). Again, we find both, firstly the lower triplicity of firstness, secondness and thirdness voiced through information, energy and quanta-based substances and secondly the unity of contradictions within the living system that maintains itself not through stabilization but through dynamics far from equilibrium.

Laszlo (2014, p.67) in this book speaks of *supercoherence* "a state which indicates the condition in which a system is coherent in itself and is coherently related to other systems". Supercoherence as "the highest value philosophers called 'The Good'" (ibid. p.68) is a version of integration induced by fourthness, "that intelligence" which in Wilber's (2014, p.1278-1297) words "is Spirit in 1st person, Spirit as your one and only True Self, the same and only Spirit looking out from the eyes of every sentient being alive – the same True Self beating in the Heart and riding the breath of every being in existence". For Wilber (2017, p.383), here at Overmind, "nothing in the Painting is left out as unloved – not a single thing or event in your awareness is judged negatively, not included, or viewed harshly – but rather your heart reaches out and puts its arms around this entire Total Painting, loving it with every ounce of energy it has", or as Laszlo (2014, p.68) puts it: "Love is the way to Supercoherence".

The "both... and" aspect of this stage of supercoherence finds its expression – among others – in the double operation of embracing paradox and opposition as well as the movement through earlier tiers. When we look at Laszlo's and Wilber's earlier writings this increased complexity can be illustrated. First, one can show this within Laszlo's (2002) *Systems View of the World*, where yet no paradoxes are resolved in the course of thematizing earlier tiers. Much more the quadruplicate structure always consists out of a fourthness or awareness of thirdness or something that could be classified as interpretation, secondness or an essence and finally firstness or a relatedness to being. Hence, when he writes about the systems-view of oneself, he differentiates three layers, that of sub-organic, organic and supra-organic which

are “‘levels’ rather than ‘categories’ of reality, distinguished in reference to modes of organization rather than to essence or substance” (Laszlo 2002, p.27) which then are reiterated and explored either in paragraphs or sentences like this: “[Rheme One [Theme Four The human being is a module]] [Rheme Two [Theme Three in the multilevel structure that arose on earth as a result of] [Theme Two nature’s penchant for building up in one place] [Theme Three what it takes down in another]” (ibid., p.60). Similarly, for Wilber (2000a, p.141) in *Sex, Ecology, Spirituality* anything is “nothing but within a quadrant” and each quadrant is in itself a triplicity of levels, as he expresses it here for the *Upper Left* – the interior Quadrant of the Individual: “[Rheme One [Theme Four When it comes to the developed forms of depth in humans,]] [Rheme Two [Theme Three I only have access to that depth via interpreting] [Theme Two what you tell me] [Theme One in a dialogue]”. Understanding self and other becomes a process of fourthness enacting *quatrothe-matic-dirhematic* syntax “[Rheme One [Theme Four and thus, I have to reread the text of my own feelings,]] [Rheme Two [Theme Three locate the source of my insincerity,] [Theme Two and reinterpret my own depth more faithfully, with the help, usually,] [Theme One of somebody who has seen the mistranslation before and can help interpret me to myself]” (ibid. p.142) – it is an issue of being aware of a certain object in simultaneous respect towards meaning, interpretation, and sincerity.

Contrary, to unfolding the wholeness of a trinity by thematizing a fourth, other thinkers at this stage rather enact the syntactical unification of opposites but background the tier sequence. One example is the early 20<sup>th</sup> century sociologist Georg Simmel (2018, p.53) when he writes “Societies are buildings out of beings which can stand on both sides inside and outside of it [...] by which society creates maybe the most conscious, at least the most general expression of an archetypical form of life: that the individual soul can never stand within a relationship, on whose outside it stands at the same time, that it is never put into an order, whose outside it is, too”. He then explicates this archetype through the religious man who “feels completely embraced by the divine being, as if it were just a pulsation of the life divine, its own substance is unreservedly, even in mystical undifferentiated-ness given into the absolute. However, to give this being-molten-into any meaning after all, it has somehow to sustain its separateness [...]. The oneness is in its meaning dependent on the other-ness of god” (ibid. p.53). One decade later, with the onset of World War I, Simmel’s view on life dramatically changed and he shifted from being a self-announced sociologist towards being a philosopher of life. In one of his *Views on Life* he seemingly forms his words within an early *quatrothe-matic-trirhematic* media. He thinks about the unification of opposites and muses “[Rheme One [Theme Four if it were, that the incommensurability of the world was given to us piece by piece,]

[Theme Three we had it one by one by one – ] [Rheme Two [Theme Two alone that they all in their togetherness form ‘a world’ is something]] [Rheme Three [Theme One that is additionally adjoined to the pure being of the multitude of individualities, a form in which it has to be bound]]” (Simmel 2017, p.236). The mind for Simmel (2017, p.236) is enabled to generate oneness, as a net, which is self-woven and therefore “[Rheme One [Theme Four if we speak of ‘world’, we mean the Total Extend,] [Theme Three of which only a vanishingly low part is amenable – ]] [Rheme Two [Theme Two which cannot be differently explained, as that we somehow are in possession of a formula which allows even to add the unfamiliar to the familiar]] [Rheme Three [Theme One so that later can assemble together with the earlier exactly this oneness of a world]]”. As we might have seen within these statements Simmel, who in his earlier writings did create unities, but not on the basis of writing across the layers of tiers, included as thematic-rhematic structure the trajectory along the tiers on behalf of resolving paradox and creating oneness. This, as said, is contrary to Laszlo and Wilber who, at this life altitude, brought together the unification of opposites with a differentiation from and objectification of their tier functions.

Simmel (2018, p.61), when he wrote about the problem of being both inside and outside of society as an individual, in his famous question about *how Society can be Possible*, composes about the process “which gives the individual consciousness its social form” that society, respectively “[Rheme One [Theme Four this phenomenological wholeness subordinates itself] [Theme Three to the purpose of these individuals who are approaching it from the outside,]] [Rheme Two [Theme Two offering them the place for their interiorly determined life process,] [Theme One at which their particularity becomes a necessary member within the life of the whole]]” (ibid. p.61). In this statement one can see that there is no general reflection about the problem of unity of oppositions as within the later stage, but a symmetrical arrangement of *quatrothematic-dirhematic* thinking. One side is a return into the other, and both become one. Like for Hegel’s (2010, p.735) *absolute idea* there is no separation of two sides “rather explicitly universality and cognition, which in its other has its own objectivity for its subject matter. All the rest is error, confusion, opinion, striving, arbitrariness, and transitoriness; the absolute idea alone is being, imperishable life, self-knowing truth, and is all truth”, as the oneness, mirroring and self-reflection of oppositions.

For Luhmann (1990, p.55) this process is best called the unfolding of paradox, and is a necessary resolution for the challenging moment when “an observer recognizes that its object is a self-referential system, and recognizes additionally to this, that this object is constituted tautologically and paradoxically, and in so far randomly and without the possibility to operate, which means it cannot be observed” but only constructed by an operation that consciously

leaves out something else – “It recognizes its own paradox: the arbitrariness and impossibility of an observation” (ibid. p.55). The solution for problems with self-reference inevitably ending up in paradoxes is exactly the movement away from a quathematic-monorhematic structure of homeostatic integration and called the recognition of the autological functioning of the absolute. Namely, that the second order observer or Cook-Greuter`s (2013, p.78) “n<sup>th</sup> person perspective” has to imagine another observer and has “to locate him- or herself on the inside or outside of a form he observers” (ibid. p.1118). By this it enables the description of self-imminent mechanisms of describing which then create an observation that is located within one of the functions of homeostasis, as both contingent and ultimately not existent. This is a movement that Wilber (2000a, p.551), in the final passages of *Sex, Ecology, Spirituality*, performs likewise, when he writes that “there we stand now, at rationality, poised on the edge of transrational perception, a Scientia Visionis that is bringing here and there, but ever and ever more clearly, to all sorts of people in all sorts of places, powerful glimmers of a true Descent of the all-pervading World Soul” – however, not as an active operation of observation but inherently as an outside view that outlines a gradient between higher and lower, here and there, in-worldly and supra-worldly and thus autologically creates different spheres of and for observation or awareness.

Below the autological operations which construct and unfold distinctions and therefore wholes in-between systems of absolute, global or cosmic, dimensions within our human spirits, Luhmann primarily dissects the operations of observing in the form of references that recognize self-thematizing tautologies – an iteration of the trithematic-monorhematic stage occupations that use tautological formal reasoning. Luhmann (2012, p.26) hereby says that “self-reference can only be realized in the actual operations of a system, if a self (as element, process or system) is identified through itself and differentiated and set apart from something else” – a process that basically includes all: adaptation, differentiation, integration and self-thematization – but within this recognizes the unity of the difference between this identity and difference. The creation of something outside of certain boundaries through a reference is the creation of an inside that is both: illusionary and real.

This particular functioning of the first media can be seen for example in the *Inventions of the Other* by Derrida (2007, p.45) where “[Rheme One [Theme Four the other is indeed what is not inventible,] [Theme Three and is therefore the only invention of the world,] [Theme Two our invention,] [Theme One the invention that invents us]”. The reference in this passage always relates back to its origin while only one rheme or idea is developed alongside four themes. Specifically, there is something that is not inventible but at the same time the only invention. Thus, a

coincidencia oppositorum is expressed: not as conscious autology but as recognition of the inherent nature of spirit and oneness enacted in each reference. Additionally, we can find this pattern on the surface of some of Susanne Cook-Greuter’s Unitive stage sentence completions. Being with other people for example, can here mean that it “is not necessarily dependent on proximity (distance) – or time for that matter. One could be next to someone and not ‘be with them’, ‘being with’ seems more like realizing that an ‘other’ is somehow part of ‘you’, and ‘you’ are part of ‘them’ – if only for a moment” (Cook-Greuter 2010, p.80).

Sri Aurobindo (2003) in one of his earlier works, the comments on the *Isha Upanishad*, applies the same thematic-rhematic field. However, accordingly to a more tier than polarity-oriented point of view that says, that anything “[Rheme One [Theme Four which dwells in the body of things] [Theme Three is God, Self and Spirit;] [Theme Two the Spirit is not the subject of its material,] [Theme One but the master;]] [Rheme One [Theme Four the soul in the body or in Nature is not the prisoner of its dwelling-place,] [Theme Three but has molded the body and its dharmas, fixed Nature and its processes] [Theme Two and can remold, manipulate and arrange them] [Theme One according to its power and pleasure]” (Aurobindo 2003, p.431). The unity of opposites again is backgrounded as in the writings of Wilber and Laszlo. Nevertheless, it is inherently mentioned in the unity of body and soul. But more important for the spiritual seeker in this passage seems a certain type of self-reference. It is created by stating the untruth of “the soul being a prisoner” that then is contrasted by the reference and emphasis on a trinitarian conception of its indwelling and powers that is presented. Figure 12 visualized the completion of homeostasis within fourthness as absolute spirit.

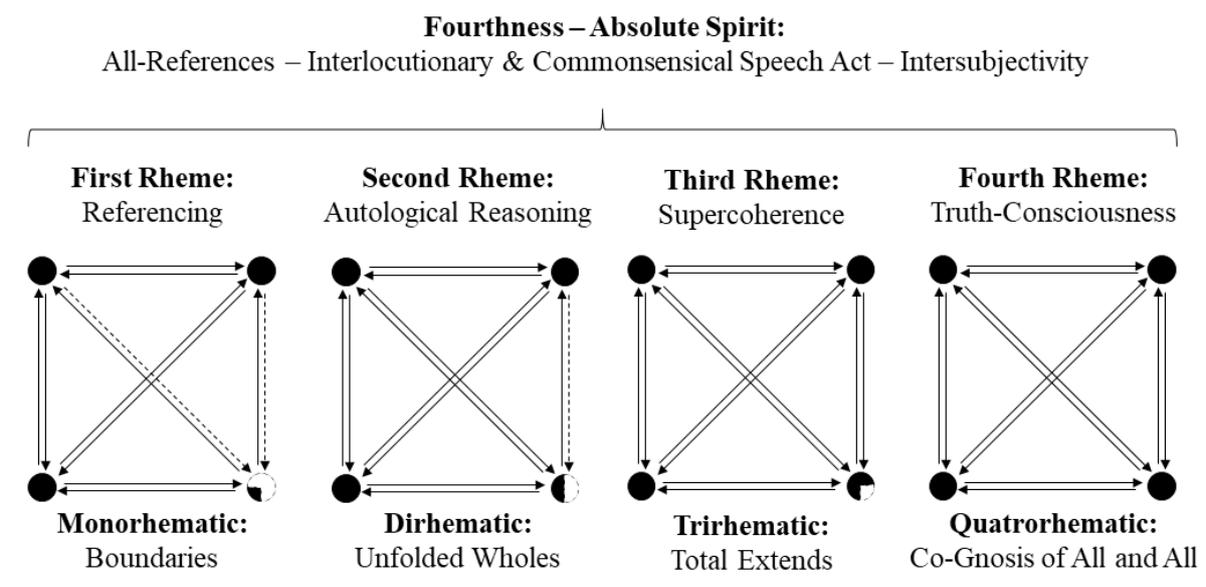


Figure 12: The Four Themes of Fourthness and the Arising of Quatrothematic Expressions

### 2.2.3. Syntax and Phases

There are already several models that propose substages. One example is the *Lectical Assessment System* based on Kurt Fischer's (1980) skill theory that makes "it possible to differentiate four phases within each level: transitional, unelaborated, elaborated, and highly elaborated" (Fuhs 2016, p.25f). An earlier attempt can be found within Anne Colby's, Lawrence Kohlberg's and colleagues' (2010) *Measuring of Moral Judgment* that distinguishes between a transitioning stage and the mature version of each altitude of moral reasoning.

To distinguish subphases within a stage through the application of homeostatic hierarchical integration through communicative action one can no longer work as well with the thematic-rhematic field. One has to look at the symbolic-syntactic level and dissect different types of subject, predicate object modifications that are the "single and same voice for the whole thousand-voiced multiple, a single and same Ocean for all the drops, a single clamor of Being for all beings" (Deleuze 1994, p.304), for the accidentals at a certain substage or phase. These oceans as grammatical categories are so called *cases*, and their combinations, which can be identified by asking simple questions. To just name some of the more important ones they include: *Nominal* (Who or What?); *Accusative* (Who or what is being or verbed?); *Dative* (To Whom or What?); *Genitive* (Whose? From what or what of?); *Ablative* (Whence? From where or whom?); *Locative* (Where or wherein?); *Instrumental* (By which means? For which ends); *Comitative* (Together with whom or what?). However, as Figure 13 shows with the example of stages and phases the overall structure of the assessment is fractal, which means that the overall assessment of stages as well as tiers could be based on – or in fact necessarily includes to a certain degree – the awareness of syntactical structures.

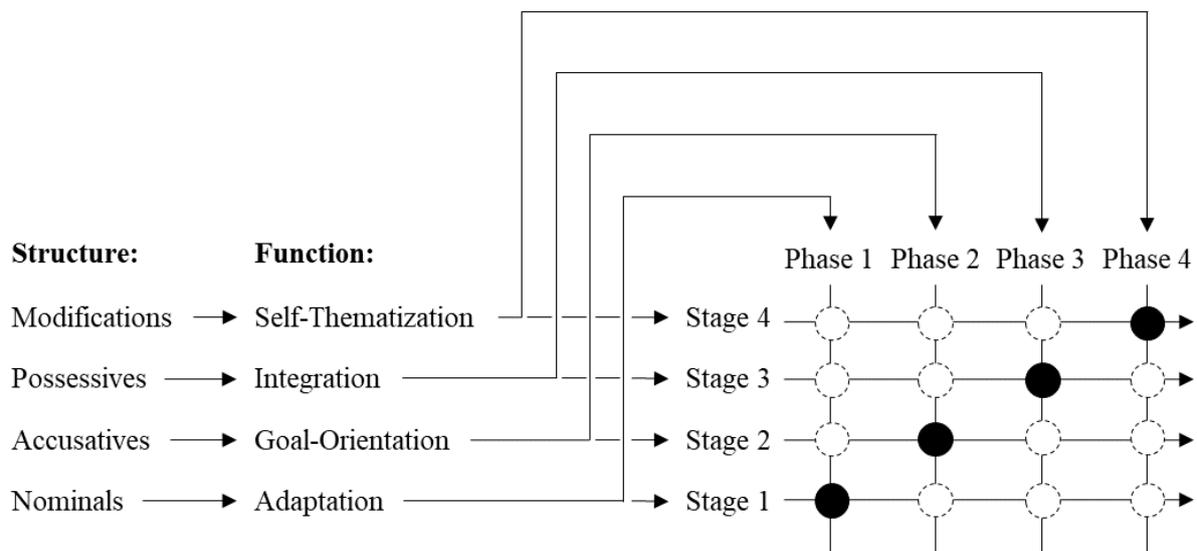


Figure 13: The Fractal Structure of Stages and Phases within each Stage

We have to keep in mind two things: firstly, that as Luhmann writes that we don't deal with simple or static and linear grammars, but closer to reality "would be the form of a labyrinthic diagram, of an artwork, of a memory, or a note box with multiple entries, centers and choices of routes" (Luhmann 2017a, p.266) when it comes to depicting the relationship of a stages self-thematization within a subphase; secondly that we are dealing with *universal grammar* and as much as many modern languages have a restricted case system compared to the richness of old-Indo-European languages "we need to cover the functions covered in a particular case and we must not accept traditional labels as face value" (Blake 2001, p.155).

What makes modern English sentences fit together is that single sentences contain subjects (the actors), predicates (the acts) and objects (e.g. the goals of the actors' actions), like in "[Subject the author] [Predicate is writing] [Object an article]". These combinations can be modified, and cases are the resulting grammatical syntactic-symbolic function of a noun or pronoun. Modern English language restricts itself to three cases the nominal or subjective (he/she), oblique or objective (him/her) and possessive (his/hers). The objective case often called oblique is a nominal case that is used to create a series of subject, predicate and object. For example, in "the author is writing an article", the nominal or subjective case is the author, the "who or what" of a sentence, while the objective or oblique is the "article". In this case that which "is being or verbed". That which is being or verbed was distinct in Old English as the accusative case, and objective case as a direct object. However, Old English impoverished over the centuries and didn't add to its case structure and thus lost this accusative and its sibling the dative case.

In the dative form of the oblique there is no direct object (the receiver of an action) within a sentence following the "author is writing", but a need for an indirect object (identifies to or for whom or what the action of the verb is performed). This indirect object is creating additional information regarding the direct object, for example "an article" and thus enhancing complexity and meaning. The sentence then would look like this "[Nominal subject: 'who or what?' The author] [Predicate verb is writing] [Accusative direct object: 'who or what is being or verbed?' an article] [Dative indirect object: 'for whom or what is something being or verbed?' for a journal]" – literally a real dative like the German one would in English look somewhat like this "[Nominal subject and predicate verb the author is writing] [Indirect dative object a journal] [Direct accusative object an article]".

As we can see, the dative enhances the sentence with some sort of possessor or beneficiary "who is receiving" or "for whom" the direct object is generated. By this the verb or predicate is followed by more than one object, it increases its valence of value and becomes ditransitive – "di" meaning "with two" and "transitive" meaning "goals" or that which is

“aimed at or towards”: hence there are now “two goals or aims” instead of one which are part of a disjunction, both distinct and corresponding to the larger whole. Like the cognitive line in developmental psychology is oftentimes considered as necessary but not sufficient for overall development, the accusative object is necessary but not sufficient for the dative. A dative object can only occur after or connected to an accusative, that’s why this seriality is oftentimes called a natural and universal hierarchy in linguistics; languages without accusative don’t show a dative either, all languages with dative show a form of accusative (Blake 2001).

However, like in the example above, the dative structure, the indirect object, can often be indistinguishable from an accusative. Especially if the indirect object follows a direction it can demand a second accusative object. This leads to an accusative of “place to which” or a causative as for example when “[Nominal subject and predicate verb the author asked] [Indirect accusative object the journal] [Direct accusative object for a publication]. Respectively the move from accusative to dative is both a gradient and then a leap.

The paucity of case makes modern English a so-called analytic language in contrast to most other European tongues. We don’t want to lose ourselves in detail here but the basic difference is that English uses strategies like prepositions, verbal voice, word order, and possessive 's for its textuality – intentions, acceptability, informativity, contextuality, intertextuality, coherence and cohesion – whereas Germans for example use inflection or agglutination to express syntactic relationships and the forms these relationships transport (Haspelmath & Michaelis 2015). Inflection means to increase the length of a word and changing its form by use of morphemes. A root is enhanced and thus a grammatical property assigned.

Since these distinctions are as all distinctions in this paper used in a relative rather than an absolute sense, we can show this with the English example from above. When inflected one can substitute the “author writes the article” by the more passive form of “the article is written by the author”, the root “write” was enhanced and inflected by dropping an “e” and adding a morpheme, the “ten”.

Agglutination means the creation of compound-words like the German “Zeitgeist” would in English rather be created by a possessive or genitive structure “the spirit of our time” or “a time’s spirit”. Some languages even move into being polysynthetic as do some German author’s, where whole sentences are arbitrated by one word like the Heideggerian “being-in-the-world” which fuses the quadruplicity of subject, object, consciousness, and world thus expressing the deep relationship which he so painfully missed in his philosophical predecessors like Immanuel Kant: their ability to have the “complete grasp of the structure of care which includes the phenomenon of selfhood as being-in-the-world” (Heidegger 1969, p.324).

Still, German and most other European languages, too, have an impoverished case system compared to other Indo-European languages (Quiles & Menchero 2017). The grammatical hierarchies of languages with all nominative, accusative object, dative object and possessive cases often and additionally include so-called modifications. Cases which center around changing the predicate verb of a sentence for example through a) adverbial or b) adjectival intensifiers functioning as c) complex prepositions modifying the relationship between nouns and pronouns (I, you, he/she/it etc.). Furthermore, these cases are changing predicates into nouns as categories of place, time or means to an end.

An a) adverb is something that is “ad-verbal” hence for support of a “verb”, a Latin form of “at-the-verb”. They answer questions of manner of “how” (angrily, happily, easily etc.), place or “where” (near, there, here etc.), time or “when” (soon, now, then etc.) and frequency or “how often” (daily, sometimes, never etc.). An b) adjective’s main syntactic role is to modify nouns and noun phrase through adding descriptive and qualitative (large, nice, cute etc.), quantitative (first, second, third etc.) or demonstrative (this, that, these etc.) descriptors. Complex prepositions c) in contrast to simple prepositions (by, at, on etc.) can be adverbials and adjectives in form of double prepositions (into, out of, from within etc.), compound prepositions (in addition to, on behalf of, in the middle of etc.) as well as participle prepositions (considering, during, concerning etc.) and phrase prepositions (on time, at home, before class etc.). They, too, help modification towards the dative form of objective cases while enriching the complexity and meaning of a sentence through additional information. This additional information refers to:

- a) the *ablative*, the “direction away from of a dative object” e.g. in “[Nominative: “who or what?” the author] [Predicate verb moves] [Accusative object: “Who or what is being or verbed?” his laptop]” [Ablative modification as adverbial of place: “where from?” away from] [Dative object: “From whom or what” his lap]
- b) the *locative*, the “place of dative object” or the place “from where” or “towards which” an object comes or is moved e.g. in “[Nominative: “who or what?” the author] [Predicate verb moves] [Accusative object: “Who or what is being or verbed?” his laptop] [Ablative modification: “where from?” from his lap] [Locative modifier as adverbial of place: “Whereto?” towards] [Dative object: “Towards whom or what” the table]”;
- c) the *instrumental*, the means “by which” or the “in order to” e.g. in “[Nominative: “who or what?” the author] [Predicate verb moves] [Accusative object: “Who or what is being or verbed?” his laptop] [Ablative modification: “where from?” from his lap] [Locative modifier as adverbial of place: “Whereto?” towards] [Dative object: “Towards whom or what” the table] [Instrumental modifier as descriptive adjective modifying next noun phrase: “Whereto?” in order to] [Noun phrase predicate and object get up for a break]”;

d) the *comitative*, the one “with whom or what” one shares or intends “to be with” e.g. in the instrumental, the means “by which” or the “in order to” e.g. in “[Nominative: “who or what?” the author] [Predicate verb moves] [Accusative object: “Who or what is being or verbed?” his laptop] [Ab-lative modification: “where from?” from his lap] [Locative modifier as adverbial of place: “Whereto?” towards] [Dative object: “Towards whom or what” the table] [Instrumental modifier as descriptive adjective modifying next noun phrase: “Whereto?” in order to] [Noun phrase predicate and object get up for a break] [Comitative modifier as phrase preposition “with whom or what” with a friend and a cup of tea and cookies]”;

Still, there are many sub-cases and structures of these modifications. As illustrate by Angerer (2020) this natural hierarchy and sequence of cases is accompanied by both Barry J. Blake’s (2001) *hierarchy of relational grammar*, the sophistication of bringing together subject, predicates and objects in complex sentences which moves from a) subject, to b) direct object, to c) indirect object and culminates in d) oblique forms with instrumental and locative cases, as well as the trajectory of childhood lexical development regarding connectives and domain integration. Jacqueline Evers-Vermeul (2005) in her dissertation about *the Development of Dutch Connectives* shows in a cross-cultural perspective that early development of syntactical structures moves through four phases: growing from a) positive additive to b) negative additive, positive causal and positive temporal to c) negative causal and temporo-causal before becoming d) adversary. The integration of several similar hierarchies especially from Carlo Quiles’s and Fernando López-Menchero’s (2017) *A Grammar of the modern Indo-European*, Haspelmath’s (2003) *Geometry of Grammatical Meaning*, William Croft’s (2003) *Typology and Universals*, Kreyer’s (2003) *Genitive and of-construction in modern written English* and Blake’s (2001) *Case* then makes possible to generate a universal grammar based domain general scoring which allows, like Theo L. Dawson (2004, p.3) writes in regard of the benefits of such universal measures, to “(1) meaningfully compare development across domains and contexts, and (2) examine the relationship between developmental stages and conceptual content”.

#### 2.2.3.1. Syntactical Architecture of the Four Phases

The Four phase again contain a first one that is *adaptive*. It is the grammatical phase as a sentence conveying its symbolic meaning through the *nominative* where “the displacement of complexity from the interior decision-behavior to the system-structures foregrounds yet unknown demands” (Luhmann 1966a, p.10) as one enters a new stage and where one basically finds only the underlying, the subject, but not as an object: the case of the subject of a sentence and predicate nominative which can be a transitive verb either and which is revealed by the question for the “who or what”. This phase is followed by a second one where the symbol-

ic-syntactical field is generating the impression of and demand for goal-oriented behavior or *differentiating* self or a system from its environment. It is the grammatical phase of the Accusative which, beyond others, is serving to review the “who or what that is being verbed” which in a certain sense is “the realm of solution-possibility and follow-up-problems” (Luhmann 1966b, p.105) as direct objects. A second like reason and cause within Hegel’s (2011, §130) *essence* as the “oneness of identity and difference; the truth of that as which the difference and the identity have added up to” where its essentiality only exists “insofar as it has the negation of itself, the relation towards the other, in itself” (ibid. §114)

A third *integrative* grammatical phase builds on to the second. It contains the cases where within an emphatic reflexive, as Luhmann (2016, p.10f) points out, “world-plot and own identity, become to [...] [man] a component of his own system-structure and to a behavioral-basis, in so far as he experiences other people, which actually experience, what is possible for him, and who simultaneously identify him as object, so that he can adopt their point of view and thus identify himself”. This phase seems to be the prerequisite for the subject to object move Robert Kegan (1982) depicts in *The Evolving Self*, namely where “what was immediate becomes mediated by a new immediate [...], a differentiation from that which was the very subject of my personal organization and which becomes thereby the object of a new organization on behalf of a new subjectivity” (Kegan 1982, p.85). This phase is embracing all cases recognizing to whom something happens or by whom something is possessed as well as forms of disjunction, comparison, dependency and independency from.

A fourth *self-thematizing* or pattern maintaining phase of those cases which all mark the same syntactic relation, that of optional modifiers to the main verb building prepositional phrases as adverbs and expressions, of “instrumental and expressive kind, which serve the solution of system-problems and in this sense the maintenance of systems” (Luhmann 2017b, p.226). It is the difference of inside and outside, of experience and action and other dichotomies or antinomies that create location, direction and means as well as “meaning that is necessarily bound to this double-structure of selection” (ibid. p.93). This fourth phase allows one for example at the metasytemic Autonomous stage to be seen as “Identity, which is the means to sustain oneself in a complex and volatile Environment through stabilizing an Inside/Outside difference” (Luhmann 2016, p.175). This phase is expressing itself through discord and/or as concord and synthesis often in the form of or accompanied by categories like “an instrument” or “the instrument” by which something is done as much as “a place” within which something resides. Table 2 is depicting different versions of syntax and the way they

operate as well as the symbolical meaning they can convey and thus the *symbolic-syntactic field*.

	<i>1<sup>st</sup> Phase:</i> <i>Adaptation</i>	<i>2<sup>nd</sup> Phase:</i> <i>Differentiation</i>	<i>2<sup>nd</sup> Phase:</i> <i>Integration</i>	<i>4<sup>th</sup> Phase:</i> <i>Thematization</i>		
<i>English Name:</i>	<b>Subjective Case</b>		<b>Objective or Oblique Case</b>			
<i>Gradient</i>	Saxon Genitive with Suffix		Prepositional Genitive construction			
<i>General Name:</i>	<b>Rather Nominal</b> (Denominating-Subjective-through-Objectification)		<b>Rather Possessive</b> (Correlating-Objective-through-Subjectification)			
<i>Valency:</i>	<b>Nominative</b> - Naming - Reference - Lemma - Voluntary Subjects	<b>Possessives</b> - Nominal - Accusative	<b>Accusative</b> - Patient - Place to which - Duration of time - Indirect Statements - Goals	<b>Dative</b> - Possessor - Beneficiary - Ablative like - Locative Like	<b>Genitives</b> - Composition - Participation - Origin - Reference - Description	<b>Modifications</b> - Ablative - Locative - Instrumental - Comitative
<i>What happens:</i>	<b>Intransitive</b> Makes the subject and words after the verb the same.	<b>Transitive</b> Makes a Nominative by modifying a noun through another noun.	<b>Ditransitive</b> Makes an object for the subject through a direct verb.	<b>Multi-transitive</b> Makes an indirect verb by adding a beneficiary of the object.	Makes possessive relations by modifying a noun through a noun with preposition.	Makes complex means-ends relations by modifying the predicate verb.
<i>Meaning Conveyed:</i>	Enables a naming of the Subject and seeing subjects as their own purpose.	Creates a compound subject or univariate relation.	Indicates action and direction or univariate relation.	Shows a beneficiary or emphasizes specifically thus creating reciprocal relations.	Makes e.g. possession, composition and references possible	Enables directional and means ends schemes that unify subject and object.
<i>Connectives:</i>	<b>Additive-Equative</b>	<b>Causal-Exclusive</b>	<b>Disjunctive-Comparative</b>	<b>Adversative</b>		
<i>Meaning Conveyed:</i>	Expression of anti-causative, equation-like, intensifying, simple coordinative and ultimately one-sided statements.	Expression of “either... or” exclusions, causation, subordination and ultimately goals and differences through agent-recipient causality.	Expression of “both... and” and integration, reference switch, comparison, concession, contextualization and ultimately the interpretative character of notions.	Expression of tensions, boundaries of self, co-subordination and ultimately paradox and unity of opposites.		
<i>Reflexivity:</i>	<b>Deobjective</b>	<b>Reflexive</b>	<b>Empathetic Reflexive</b>	<b>Full Reflexive</b>		

Table 2: The Four Phases within each Stage and their Symbolic-Syntactical Field

### 2.2.3.2. Exemplary Assessments of Phase

In the following Table 3 shows exemplarily for our *trithematic-dithematic* or *3.2 Stage*, the Achiever, that one can sort through sentence completion items and align them with these

phases. The sequenced examples are derived from Cristi A. Zavarella's (2009) *Construction of a Manual for Item 27* of Susanne Cook-Greuter's maturity assessment profile. There, one can intriguingly how a complexification happens throughout a stage where in the dative or genitive phase the adding of a beneficiary creates the growth into universal grammatical structures that not only veiled but well-formed existed for example in Kalkatungu, an extinct Australian Aboriginal language, sometimes called the anti-passive. This term is derived from the recognition that it "is a derivation that allows access to the privileged relation" (Blake 2001, p.57) where one not becomes not only patient but beneficiary – the object to a new subject, so to say, that might be outside of oneself. It is similar to cases like the beneficiary applicative and the instrumental or comitative applicative, where a participant of a sentence is advanced to assume the grammatical relation held by the patient including typical instrumental or comitative markers, too, to move for example "the internal orientation from patient into a manner" (Martin 2000, p.392) or purpose expression or a direct object is stated in a way that it is a possible passive subject. We can see this in the completion that, if people step out of line at work, "[Passivized Stepping Out of Line the source for their action should be determined and investigated] [Purpose or Reason for Being Passive in order to resolve the problems upon which their behavior is based]". It creates a move from actor or simple reflexivity towards beneficiaries.

		Sentence Completion	
<b>Phases &amp; Case Structure</b>		People who step out of line at work...	
Increasing grammatical sophistication →	<i>Phase 1 – Adaptative:</i> <i>Nominal: "Who or What?"</i>	<i>...are probably the most interesting.</i> <i>...are probably creative.</i>	
	<i>Phase 2 – Goal-Oriented:</i> <i>Accusative: "Who or what is being or verbed?"</i>	<i>...should be given a chance to explain their actions.</i> <i>...probably have something interesting to say.</i>	
	<i>Phase 3 – Integrative:</i> <i>Dative: "To Whom or What?"</i>	<i>...can sometimes have something different and useful to contribute to the organization.</i> <i>...are annoyances to the people they work for and should be prepared to seek alternative employment.</i>	
		<i>Genitive: "Whose? From what or what of?"</i>	<i>...are often doing so to rebel against unduly restrictive rules and regulations of their peer group.</i> <i>... are often taking risks which are usually for reasons of principle and challenge the System.</i>
		<i>Ablative: "Whence? From where or whom?"</i>	<i>...should be talked too, to find out why and if there is something to be learned from either side.</i> <i>...should be counseled as to how better to express their dissent while still being respectful of others.</i>
	<i>Phase 4 – Self-Thematization:</i>		
	<i>Locative: "Where or wherein?"</i>	<i>...need to be steered in the right direction and shown the effect their behavior has on everyone surrounding them.</i>	
	<i>Instrumental: "By which</i>	<i>...should not necessarily be punished. The source for their action should be determined and investi-</i>	

<i>means? For which ends?"</i>	<i>gated in order to resolve the problems upon which their behavior is based.</i>
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Table 3: *The Four Phases Within the Trithematic-Dirhematic Achiever Stage of Ego-Development*

But again, this is part of a larger hierarchy, where each phase can show a unique sort of passive structure complementing its active variations. A hierarchy of universals that, too, forms a “semantic field with various diachronic and synchronic connections between all of the three [later, b) to d)] categories” (Gast & Siemund 2006) from a) intensifiers like “the most” including anti-causative or de-objective as passive and intransitive verbs to b) reflexivity e.g. in “given a chance to explain their actions” with impersonal forms of passive and transitive verbs, c) referential disambiguation, or variation of context, accompanied by adnominal intensifiers leading to so-called emphatic reflexivity like in “[the identity of accidents constitutes what signifies the temporal problematic of accumulation, namely the progress of the present as an ever actual moment, which cannot automatically] [adnominal intensifier 1 carry itself what it accumulates, rather has] [adnominal intensifier 2 with ditransitive verb to seek itself retention and accession]” (Luhmann 2014, p.17) and di-transitive verbs – verb forms followed by two or more objects allowing for natural reciprocity – to d) role disambiguation through actor-oriented intensifiers, which are used to relate a proposition to a set of alternative propositions and by this create an 1) actor-role assigned to 2) an actor or instrumental category 3) other than the referent, thus managing full reflexivity by having 4) “a different thematic role in the alternative propositions, e.g. that of an external causer or beneficiary” (Gast & Siemund 2006, p.14). A case form we can observe in Luhmann’s 1969 writing: “[Proposition One Thus far as systems start to orient on the basis of temporally distant effects] [Actor-Oriented Intensifier by themselves,] [Proposition Two with System as Negative Beneficiary well, in regard to purposes, the present in itself becomes problematic]” (Luhmann 2017b, p.226). This structure is contrary to the intransitive verbs of the first phase, too, signified by so-called derived intransitivity expressing itself beyond others through the “orient by themselves” which contrary to “to seek itself retention” lacks any necessity for an object, like intransitive verbs in the first phase do, too. The possibilities for expressed grammar are manifold and suggest that there are many variations. A schematization can be seen in Figure 14 that depicts Martin Haspelmath’s (2003) semantic web for dative constructions from *The Geometry of Grammatical Meaning*.

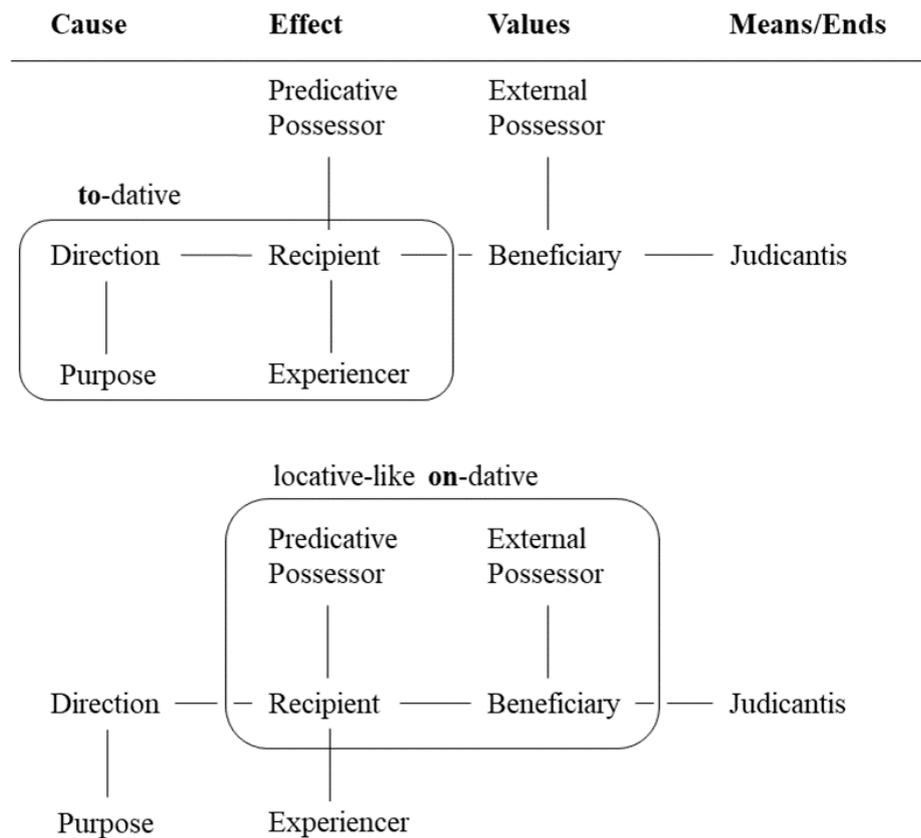


Figure 14: Different Types of Dative Based on Haspelmath's (2003) *Geometry of Grammatical Meaning*

Since we propose a domain general scoring metric that should enable one to replicate all domain specific assessment Colby's and Kohlberg's (2010) *Standard Issue Scoring Manual for the Measurement of Moral Judgement* is of special interest for such a claim. Since they "allow for so-called transitional stages between all 'true' stages of moral development, which is that certain responses to their dilemma questions appear to be above one Kohlberg-Type of moral reasoning but as yet below the next one in the sequence" (Minnameier 2015, p.111) we can show that both the transitioning phases as well as the actual stage represent certain sub-phases of homeostatic hierarchical integration through communicative action. Table 4 exemplarily shows that early versions of a moral stages tend to use nominal and accusative grammar, while later or second half version tend towards dative and modifying grammar – of course these are tendencies with some exceptions of crossing over into earlier or a bit later grammar. The examples are derived from answers on the Heinz Dilemma, where a husband has to either steal a drug to save the life of his wife or passively watch her die. Like Gerhard Minnameier (2015, p.112) in his *Revisiting Kohlberg's Stage 4/5* writes one can on basis of this reason about and describe all substages as "a main cornerstone in the overall developmental hierarchy". In fact, Ego-Development as defined by Hy and Loevinger (2014) as well as by

Susanne Cook-Greuter (2010) divided the *trithematic-trirhematic* stage into Pluralist and Autonomous.

			Question on Moral Dilemma
Case Structure & Stage		Would a good husband think it is his duty to steal and Why?	
Trithematic-Monorhematic 3.1 Stage	Expert	Stage 2/3 Nominal and Accusative: “Who or What?”	[Nominal Part Well, I think it would if his wife is going to die,] [Accusative Part he wouldn't have much choice.] (Colby & Kohlberg et al. 2010, p.19)
	Stage 3	Instrumental and Locative: “Where or wherein? By which means?”	[Nominal Part as Adjectival Instrumental: “How was He?” <i>He should not have been so selfish</i> ] [Instrumental Part with Possessive <i>with that drug of his, and I think Heinz did right</i> ] [Locative Part as Time <i>when he did break</i> ] [Locative Part as Interior <i>into that store</i> ] ( <i>ibid.</i> p.22)
Trithematic-Dirhematic 3.2 Stage	Achiever	Stage 4/3 Nominal and Accusative: “Who or What?”	[Nominal Part as Genitival Accusative <i>Because it is a matter of life and death,</i> ] [Accusative Part <i>it gets down to a matter of life and death,</i> ] [Accusative as Temporal Subordinate <i>then you are balancing the financial greed of one person against a life.</i> ] ( <i>ibid.</i> p.32)
	Stage 4	Instrumental and Locative: “Where or wherein? By which means?”	[Nominal Part as Locative: “In” <i>We like to believe there is something special in a human being,</i> ] [Dative Part as Possessive <i>perhaps some spark of the divine,</i> ] [Comparative Part <i>something like this which it is wrong to kill.</i> ] [Nominal Part as Locative: “Within” <i>This is something within a person</i> ] [Instrumental Part: “by Which” <i>that raises him above an animal, which removes him from being treated like an animal.</i> ] ( <i>ibid.</i> p.47)
Trithematic-Trirhematic 3.3 Stage	Pluralist	Stage 4/5 Nominal and Accusative: “Who or What?”	[Nominal Part <i>The commitment to another person</i> ] [Accusative Part: Series of Accusatives <i>which involves a total commitment, and, in a sense, he is taking the action because she cannot take it herself,</i> ] [Nominal Part: a Third which Holds “Both... And” <i>in the sense of a marriage being this kind of thing, something in two bodies</i> ] [Nominal Part: Conjunctive as Equation <i>in that sense, there is not much difference in terms of responsibility of her</i> ] [Accusative Part <i>trying to do something for him.</i> ] [Nominal Part as “Both... And” <i>That involves a commitment to each other and, too, some kind of form of life or something like that</i> ] ( <i>ibid.</i> p.49)
	Autonomous	Stage 5 Instrumental and Locative: “Where or wherein? By which means?”	[Nominal Part as Locative <i>...it revolves around what I was saying just about rights</i> ] [Comitative Part <i>that kind of go with a human being,</i> ] [Adversative Part <i>but really those rights have been defined</i> ] [Instrumental part: “By which Means?” <i>by us as people, by agreements that we reached through some kind of social process...</i> ] ( <i>ibid.</i> p.55f)

Table 4: Syntactical Comparison of Responses on the Heinz Dilemma with Homeostatic Integration & Ego-Development

#### 2.2.4. Types, Stages and Syntax

Types seem for many reasons as essential for measuring development as stages themselves. First and foremost because types are “classification schemes that consist of characteristics that essentially remain the same throughout structure development” (Wilber 2017, p.581). Thus, one has to be careful not to introduce hierarchy of earlier or later, simpler or more complex within typology. At the same time as Carl Gustav Jung (1953, p.56) stresses in *the Psychology of Individuation* one “should never seriously try to reduce, one type to the other, as though everything essentially 'other' were only a function of the one”. This means that a model as long as it only formulates one core and surface structure along a sequence of stages necessarily reduces one type to another or conflates differences into sameness. However-

er, the disjunctive approach of Loevinger and Wessler (1970, p.55) and orientation towards categories and themes “that flash out the picture of ego development with the words of ordinary people” automatically opens the eyes to recognize typological differences at both the category and theme level.

Besides that, there have already been some efforts to integrate typology into stage development. One approach again as with the subphases of a stage is depicted in Colby's and Kohlberg's (et al. 2010) *the Measurement of Moral Judgment*. Their distinction between moral *Type A* and *Type B* “places an ideal type distinction on the continuum of developing moral autonomy” (ibid. p.909), which means that only the later subtype uses autonomous moral reasoning, for example by judgments that “reflect a clear hierarchy of moral values and prescriptive duties that supersede pragmatic, descriptive, consequential, or aesthetic considerations” (ibid. p.913).

However, to include type in one's assessment methodology and ontogeny of the model does not only provide an additional dimension to assessments. Abraham Maslow (1993, p.273) points out in *the Farther Reaches of Human Nature* there are self-actualizers that “speak easily, normally, naturally and unconsciously the language of being, the language of poets, of mystics, of seers, of profoundly religious men, of men who live at the Platonic-Idea level [...] under the aspect of Eternity”. Maslow calls them the transcendents, while other merely healthy self-actualizers “tend to be ‘doers’ rather than meditators or contemplators, effective and pragmatic rather than aesthetic, reality-testing and cognitive rather than emotional and experiencing” (ibid. p.271). But whether and when those differences in attitude and orientation really reflect “differences in degree” is a question that can only be answered based on increasing the sharpness of our categorial and hypothetical judgments. Agreeing with this idea, Kohlberg, Levine and Hower (1984, p.278) discovered their types “as a consequence of the revision of old assessment strategies [...] [that made visible] that there are so to speak characteristics of moral judgment that lie in-between form and content, which are independent of development”. However, since *Type B* judgments intuitively resemble “the comprehension of central values and commitments” (ibid. p.279) which become rationally explicated only at later stages a less mature and longstanding ripened model automatically should include a likelihood for a type-stage-fallacy. One of several possible fallacies stage theories regularly commit (Angerer 2020).

Maslow with relating to a semblance of Plato, when he speaks about transcendents, already opens up one of the main historic and typological dichotomies. Regrettably one that is not based on stage but as Jung (1953, p.13) would say something produced by chronic and “com-

plicated external conditions under which we live, as well as the presumably even more complex conditions of our individual psychic disposition, [...] namely a habitual attitude, in which [...] one mechanism permanently dominates”. Namely, the chronic distinction and historical conflict between so called Aristotelian systems and Platonic ones. Overstated, the fact “if all philosophy is a footnote to Plato, so is all science, a footnote to Aristotle” (Arora & Awasthy 2007, p.78).

Charles Taylor (2016) in his *Sources of the Self*, too, points at that conflict several times in western history. A conflict that he one time frames in moral terms as the opposition between imperative of willfully doing the good, stated by the Aristotelians, that is contrasted with idea of the good by the Platonic traditions, or “the love of god at the center of good life” (Taylor 2016, p.647) – of course a god, that can take on many forms like *nature as source* in the romantic expressivists` attitude: “a certain manner, to experience our being, our common desires and fulfillments as well as the comprehensive order of nature, in which we find our place” (ibid. p.647). A dichotomy that resonates, too, in Maslow`s distinction between the rather Aristotelian self-actualizers that still live in “the world of deficiency-needs and of deficiency cognition” (Maslow 1993, p.271) and the mere Platonists “that are living at the level of being” (ibid. p.271).

Very generalized one could say that “all philosophy is deductive [...] [and] all science is inductive” (Arora & Awasthy 2007, p.78) and henceforth the distinction establishes a psychological condition of reasoning from general principles and one that is deriving conclusions from special cases towards broader categories. Of course, both forms of reasoning are rather auxiliary when one looks closer or as Jung (1953, p.13) muses “every human being possesses both mechanisms as an expression of his natural life-rhythm”. But in general, as Ken Wilber (2017, p.681) puts it in the *Religion of Tomorrow*: each holon “can be looked at from ‘without,’ or from the ‘outside’ in an objective/universal/rational stance, or looked at from ‘within,’ or from the ‘inside’ in a subjective/local/cognitive/enacted stance”, an therefore there have to be both points of view enacted on each stage and in each person to a different degree.

As it seems the distinction between both types can well be comprehended through the Jungian lineage of typology in *Gifts Differing*, written by Isabel Myers-Briggs and Peter Myers-Briggs (1980, p.1), that distinguishes between *perceiving* “understood to include the process of becoming aware of things, people, occurrences, and ideas” and *judging* “the process of coming to conclusions about what has been perceived” (ibid. p.1). Here earlier necessarily establishes a guiding principle either in the form of *sensation* “that draws the subject into the object; hence for the naive type the ‘danger’ consists in his subjection to the object” (Jung

1953, p.168) or “Intuition, being a perception of one's own unconscious processes, withdraws from the object“ (ibid. p.168). This distinction between sensation as being guided by the object world and intuition as being guided by the Platonist world of ideas. Another way to frame this is the difference between “realistic and idealistic attitudes” (ibid. p.169). This dichotomy between sensing and intuition seems to correspond to Kohlberg’s types of moral judgments where the heteronomous type a, whose judgments are contained “within the constraints of external parameters and are justified using these parameters (Colby & Kohlberg et al. 2010, p.913), replicates the sensors tendency to judging on behalf of “concrete facts” (Myers-Briggs 1980, p.5), while the intuitive and idealistic attitude reflects the virtues of the autonomous type who is judging “without reference to external parameters” (Colby & Kohlberg et al. 2010, p.913) where the “truth is imagined on the basis of unconscious processes” (Myers-Briggs 1980, p.6). Interestingly the supposed distribution of sensors and intuitive persons in general high school populations (Myers-Briggs 1980) very much reflects the findings of a longitudinal cross cultural study on *Autonomous versus Heteronomous Moral Judgment Types* conducted by Regina Logan, John Snarey and Dawn Schrader (1990), where *type a* is much more common than *type b*.

Interestingly, Kohlberg, Levine and Hewer (1984), too, in *Moral Stages: A Current Formulation and a Response* distinguish within the idealistic and autonomous type two antagonistic but somewhat complementary views that are possible. One is derived from Kant’s conception within the *Critique of Practical Reason* and prioritizes a more perceiving and intuitive stance where moral action is deductively derivable from a universalism that “obtains for every other actor in similar situations and under equal circumstances” (Kohlberg, Levine & Hewer 1984, p.281). The other pays credit to the constructivist perspective of Piaget where moral action is inductively achieved as an “active achievement of construction, whereby experiences are assimilated, while the thinking simultaneously accommodates to the environment” (ibid p.347).

Irrespectively of the speculative nature of the approach, to combine developmental assessment with a Jungian approach to typology, one can distinguish between more *perceiving* and more *judging* and respectively more *outside-oriented-deductive* and *inside-oriented-inductive* personalities by pointing to modifications of syntax. As we will see one of the main differences is that perceiving homeostasis tends to replicate a subject, predicate, object modification that is demarcating the movement of communication across the different tiers, in a descending fashion that is defining ideal forms, while judging tends to coordinate them more on behalf of resolving tensions between polarities by ascending. This reflects their central orien-

tation. In their extremes, as Wilber (2000a, p.331) formulates in *Sex, Spirituality, Ecology*, they either are “denying creation [or] seeing only creation”. The Platonist and perceivers “who will virtually destroy ‘this world’ (of nature, body, senses) in favor of anything they imagine as an ‘other world’” from which they look down and to which they seek to ascend; and, on the other hand, the shadow-hugging Descenders,” (ibid. p.130f) writing in ascending syntax “who, in trying to turn the finite realm into an infinite value, end up distorting ‘this world’ [...], precisely because they want – and force – from ‘this world’ something that it could never deliver: salvation” (ibid. p.131).

This distinction echoes in Susanne Cook-Greuter’s (2013) *A Full-Spectrum Theory of Vertical Growth and Meaning Making* where she distinguishes two subtypes of Loevinger’s original *E7 Individualistic* stage. On the one hand the E7 person according to Cook-Greuter can show up as *individualist* – the merely Aristotelian orientation – where “there is a new sense of body/mind connection and a beginning understanding of the interwoven, systemic nature of experience” (Cook-Greuter 2013, p.55) giving rise to more fullness as the search for salvation by being “concerned with making a unique and personal contribution to the world independent of any socially approved roles or task” (ibid. p.55). On the other hand, a *pluralist* attitude is fostered by this stage that in its perceiving mode tends “to focus on the multiplicity of voices and contexts. Aware of their own views as interpretations, they do not want to impose these on others” (ibid. p.59). In their mere Platonic orientation, they cement an iteration of what Roberto Magabeira Unger (2007) writes in his *Pragmatism Unbound*, a critique of the neo-Platonic Perennialism, that is underpinning Wilber’s point of view. Namely, stating “the manifest world of distinction and change is an illusion, or if not simply an illusion, then a shallow and ephemeral expression of a more real unity of being” (Unger 2007, p.11) gives in its extreme rise to a deconstructive postmodernism. The pluralist then “believes that it is impossible to defend any belief by proclaiming that all views are subjective and therefore legitimate since everything is relative” (Cook-Greuter 2013, p.60).

As an example, one can take a sentence from Aristotle’s (2018, 1094a) entering chapter of the *Nicomachean Ethics* that starts off at the level of being and perception, i.e. adaptation, followed by the level of concrete agents, i.e. differentiation, and is concluded by a third integrative element: “[Firstness: A Phenomenon and Pole One If, then, there is some end of the things we do, which we desire for its own sake] [Secondness: A Goal Orientation as an Identical but Inverted Pole Two everything else being desired for the sake of this, and if we do not choose everything for the sake of something else,] [Thirdness as Integration clearly this must be the good and the chief good]”. Within Plato’s *Republic* we can find the reverse order “[Thirdness: Integration as Meaning But as to this very

thing, justice, shall we so simply assert that it is the truth] [Secondness: A Direction of Agency and giving back what a man has taken from another,] [Firstness: A Phenomenon or is to do these very things sometimes just and sometimes unjust]”? (Plato 1991, 331c)

The second structural criteria we hypothesize to distinguish perception from judgment based on grammatical analysis is based on Piaget’s and Inhelder’s (1958, p.104) “sixteen binary compositions of propositional logic”. It is not important for our purpose to know this concept, but only to understand, that there is a negation operation “which is the complement of the direct operation under complete affirmation” (Byrnes 1988, p.75). That means that any statement can either be affirmed or negated and there are many forms of affirming something or reversing these affirmations, where of course the negation is affirmative, too, in the Spinozean sense. Now, since a perceiver is taking an outside view a systems boundary or specific idea or reference is revealed that is an “interface of both differentiation from the other and touching or relating to the other [...] as the region of differentiation-and-integration of various dimension-perspectives” (Wilber 2006, p.28 & p.33). The boundary here shows up when “the individual refers to itself by setting limits to every other; but these limits are therefore also the limits of itself; they are references to the other” (Hegel 2010, p.88) and because therein primarily negations the more perceiving type has a tendency to use the different degrees of complexification and variations of the negation operation within Piaget’s and Inhelder’s binary scheme. “The cancellation or nullification of a direct operation” (Byrnes 1988, p.75) which nevertheless defines the direct operation. In the contrary way there is a preference for affirmative judgments assumed for the inside and judgmental temperament.

Henceforth when Plato defines the idea of the good in *the Republic* he states that “as for knowledge and truth, just as in the other region it is right to hold light and sight sunlike, but to believe them to be sun is not right; so, too, here, to hold these two to be like the good is right, but to believe that either of them is the good is not right” (Plato 1991, 508e) he supports the affirmative judgment in the earlier statement by an inverse operation of conjunction, a negation called *incompatibility*: “which means that the characteristics denoted are never conjunctive” (Piaget & Inhelder 1958, p.295). In further defining the good he then states that we can “say that not only being known is present in the things known as a consequence of the good, but also existence and being are in them besides as a result of it, although the good isn't being but is still beyond being, exceeding it in dignity and power.” (ibid. 509b) uses reciprocal exclusion and nonimplication.

When we compare Aristotle (2018, 1097a & 1097b) on the highest good, where “happiness seems more than anything else to answer to this description: for we always choose it for itself

and never for the sake of something else, while we choose honor, pleasure and reason, and all virtue or excellence partly indeed for themselves, but partly also for the sake of happiness, supposing that they will help to make us happy”, the structure is rather conjunctive. The negation in the phrase “for we choose it never for the sake of something else” does not add additional information, as do the inversions in Plato’s work. It simple restates and thus, though negatively formulated, is simply an affirmation in negative language, not an additional operation that is increasing complexity and dissecting one from another and thus creating an identity. It is without informational surplus value. We already pointed to these two different ways of looking at the world within fourthness when we compared Georg Simmel (2018) and Derrida (2007) to Sri Aurobindo (2003), Wilber (2000a) and Laszlo (2002). Figure 15 schematizes these differences within fourthness.

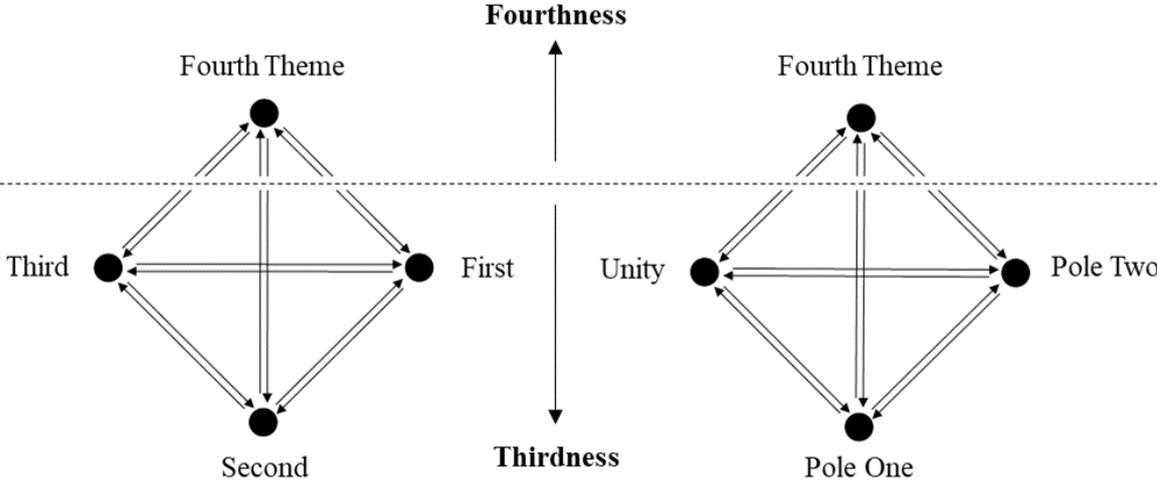


Figure 15: Schematization of Two Types of Fourthness

2.2.5. Structure of the Whole

The Model of Homeostatic Hierarchical Integration through Communicative Action assumes like the Model of Hierarchical Complexity and Ego-Development Theory “that all human beings evolve towards greater complexity, coherence and integration” (Cook-Greuter 2010, p.43). However, the underlying conception of homeostasis, since it proposes an evolution through a restricted number of substages that is directed towards survival, it naturally prioritizes states that, corresponding to “the living organism, are then those states in which certain essential variables are kept within assigned ‘physiological’ limits” (Ashby 1956, p.197). But each homeostat and its expressed form, the particular self and its accidental choices within the necessities, creates a unique essence that like each homeostat has the “essential feature of the good regulator [which] is that it blocks the flow of variety from disturbances to essential variables” (ibid. p.201). And this may lead, as Clare Graves (2006, p.505) writes, in

some cases to the point where “a person may not be genetically or constitutionally equipped to change in the normal upward hierarchically ordered, more complex direction when the person’s conditions of existence change”. Since each person can stabilize several combinations of homeostatic functions at the sixteen depicted stages “he or she may, under certain circumstances, regress to a system lower in the hierarchy. And a person may settle, for specifiable organismic or environmental reasons, into what appears to be a fixated and relatively closed system rather than be in the usual, open state of development” (ibid. p.505).

Ken Wilber (1984, p.75) punctuates Graves concerns, when he, in *the Developmental Spectrum and Psychopathology*, considers that “if consciousness develops through a series of stages, then a developmental ‘lesion’ at a particular stage would manifest itself as a particular type of psychopathology, and an understanding of the developmental nature of consciousness – its structures, stages, and dynamics – would prove indispensable to both diagnosis and treatment”. For Wilber (1984, p.84) back then there were four main dimensions of pathology and health: “On a given level, then, the self is faced with preservation vs. negation, holding on vs. letting go, living that level vs. dying to that level, identifying with it vs. disidentifying from it. Between levels the self is faced with ascent vs. descent, progression vs. regression, moving up the hierarchy to levels of increasing structuralization, increasing differentiation-and-integration, or moving down to less organized, less differentiated, and less integrated structures”. The model of homeostatic hierarchical integration according to Figure 3, which shows the causative scheme of homeostatic hierarchical integration, the main sites of fracture would be assimilation, accommodation, integration and self-regulation. However, a more simplistic point of view will serve here as well. It is, too, based on Wilber, but his more recent ideas in *the Religion of Tomorrow*. There he writes that “if the central self-sense does not fully dis-identify with a particular level in order to make room for the next higher level, then the person develops a fixation to that level” (Wilber 2017, p.100). By this a subpersonality, with an *addiction* to earlier homeostatic functions and their expressive forms, is created whereas contrary, when “differentiation goes too far and the central self-sense does not appropriately disidentify with a particular level but instead dissociates from it, it will disown facets of that level, [...] and hence cause an *allergy* to that level’s needs, drives, desires” (ibid. p.101). Since homeostatic hierarchical integration rather looks from within than from the outside one can say that on the one hand accommodation and hence the improper use of a later media creates follow up problems whereas on the other hand a failure in assimilation, integration and coordination of earlier functions leads to a disintegrated form of self.

For Wilber (2017, p.407) thereby “each increasing level of development brings new capacities and new ‘evils’”. In a certain sense one must admit that: the later one’s stage the less direct, visceral, or manifest is the possible “evil” and the more involuntarily possibilities to unfold. While at the same time stages of fourthness allow much more easily to identify their major prioritization pattern and concomitantly their blind spots. This is because they use all four themes at a time and within one sentence regularly and thus make palpable and visible their structure of the whole immediately – instead of distributing it throughout several sentences. If we take for example a notion from Terri O’Fallon (2012) we can discern one possible extreme. She writes that “the expansion [of consciousness] moves beyond individual experience to collective experiences, to contextual experience to experiences of the Kosmos as whole, only step out of that to find that the container that holds this vastness is nothing but a world of Mind that makes distinction” (O’Fallon 2012, p.102). Here, we can see an outside quathematic-dirhematic unfoldment of a whole where three functions are used for – “[Rheme One [Theme as Fourthness: Consciousness the expansion of consciousness] [Theme as Thirdness: Different Realms of Interpretation moves beyond individual experience, to collective experiences, to contextual experience, to experiences of the Kosmos as whole,]] [[Rhema Two [Theme as Secondness: Action only step out of that to find that the container that holds this vastness]]” is a “nothing but”, a categorization, of the more platonic and perceiving thinkers, particularly “[Theme as Firstness: Source of Phenomena a world of Mind that makes distinction]”. The structure by this indicates a splitting of all the earlier worlds. They are demarcated as illusion or nothing but mind-made distinctions. For Wilber (2017) his *violet altitude*, which should roughly correlate with the second stage of fourthness, has a common tendency to either excesses heavenly attachment or to “become overly attached to the ‘earthly’ side of the street” (Wilber 2017, p.376). The utilization of homeostasis within O’Fallon’s writing seemingly includes earlier: anything but nothing is an illusion – so far, our interpretation is accurate. However, since that judgment seems to be made from awareness of a firstness – it might, too, be that the world of physical being, and the senses is to a certain degree conflated with mind. The world is explained as nothingness and the finding comes from a firstness potentially mistaken for genuine fourthness which then expresses her ideal that “the senses will be defined as any channel through which distinctions are made, from prehension (concrete matter), to sensation (subtle life), to awareness (mind)” (O’Fallon 2013, p.2). When we compare her model with Aurobindo (2005) and homeostatic hierarchical integration as well as others one possible interpretation that arises is to see that the seeming overidentification with the senses goes along with an unobjectified firstness, as

well as with a displacement of the whole tier structure (for this see Angerer 2020): the first tier disappears and in place of this fourthness is subdivided into two tier cycles.

Contrary, Adi Da Samraj (2009, p.1043) in his *Aletheon* writes, that “there are no really-existing ‘objects’ – no separate and independent ‘outer-objective’ or ‘inner-objective’ forms states or ‘things’” but everything is only “a self-modification of the transcendental spiritual self-radiance of the one and indivisible consciousness light that is the intrinsic self-nature, self-condition and self-state of reality itself” (ibid. p.1044). Here anything is reduced to an aspect of fourthness hence self-thematization however, maybe as an overidentification with the expression of fourthness within its thirdness. While, when we take Ervin Laszlo’s (2002, p.60) passage from his *Systems View of the World* quoted above, where the “human being is a module in the multilevel structure that arose on earth as a result of nature’s penchant for building up in one place what it takes down in another”, one can see that all homeostatic functions from firstness to fourthness are arising on earth, being modules and results of nature’s penchant. Thus, in Laszlo’s writing all levels seem to be reduced to *secondness* or vital essences.

Independent of this procedure to identify structures of the whole, we just naturally have to deal with inherent contradictions generated by so-called *supertheories*, “which constitute their objects in a way, that demands that they themselves have to appear as part of their objects”, so Luhmann (2008, p.59). On the one hand we enable to thematize certain objects on the background of homeostasis, but only within exactly that frame of being functions of the homeostat. A reference that, to a certain degree, disables the thematization and critical reflection of our own special mode of scientific communication – which respectively is only another accidental filled form of what we call “homeostatic integration” and others define differently and in more intriguing or simplistic form.

Therefore, it is imperative to establish mechanisms that hedge and critically reflect any of our contingent judgments. Ultimately, since any person can, at least according to the model of hierarchical integration, only use maximally four themes expressing four rhemes, no human being can ever express the completeness of the all and all within one utterance or without arranging multiple cosmoses and a permanent fluctuation of awareness within themselves as the container of these realities. Uniqueness and disparity and resulting contingency are necessarily outcomes of homeostasis that drive the enactment of phenomena, life, mind and spirit forward either in to recess or evolution.

One way to select more democratic and unbiased between the definition of pathological and desired forms is a solid orientation towards an ethics of discourse. This includes that a model cannot take “the position of a detached observer”, so Habermas (1991, p.153), since

“anybody who wants to contemplate something with a moral point of view, is not allowed to spiral out of the intersubjective coherence constituted by all participants of a communication”. Only given a willingness to establish interpersonal, hence *inter-model relationships*, “and to meet within this performative mindset, one allows to experience oneself as addressed by binding norms” (ibid. p.153) of good and evil, healthy and pathological and so forth. Although the model of homeostatic integration generates several and more nuanced perspectives on the issues of object related, normative and therapeutic discourses that generate all perspectives of aesthetics, ethics, psychology and functionality and help to figure out the thin red line between uniqueness and challenging the viability of a certain stage, tier or the whole homeostatic system spread throughout and manifested as planet, animal, man and mind we have to suffice with this tiny excerpt of what the model is able to promise.

#### 2.2.6. Assessment through Metric and Manual

Susanne Cook-Greuter (2010, p.39) writes that she “first noticed a lack of theoretical ‘logic’ in the assignment of many categories in the [original Loevinger] manual” when she started scoring with the sentence completion test. Her ruminations on solving these issues are quite lengthy but in the end she started contrary to “the categories in the existing manuals, which are stem-specific” (ibid. p.42) to propose *post-autonomous* categories “which were at a higher level of abstraction and applied across all stems, as they reflect stage specific themes” (ibid. p.42). She, using the terminology we introduced under heading 2.2, where we wrote about the difference between structure and function and the respective metrics or taxonomies paralleling the ontogeny of our model, shifted from content based to the conditioned standards: Dawson’s (2004) so-called *surface structure* level assessment.

We recognized the same issue with Loevinger’s manual that, as Kohlberg (1979) writes, is a result of the so called “*saving circularity*” (Loevinger 1976, p.211). This means that an “response is posited at a certain stage, if an item analysis shows, that it oftentimes appears in a protocol, which through objective means is scored at a certain stage” (Kohlberg 1979, p.197). Kohlberg (1979, p.184f) used another technique which he called “*mutual bootstrapping*, a sequential working back-and-forth between theoretical assumptions, the postulated structure-stages, on the one hand, and empirical materializations of these structures in respondent’s answers”. For the assessment with the model of homeostatic hierarchical integration the “bootstrap” worked across three layers between the core structure, the surface structure and the content level. Through this method several items from Hy and Loevinger (2014) as well as *Item 27* “When people step put of line at work...”, *Item 35* “My conscience bothers me when...”, *Item 16* “I feel sorry...”, and *Item 6* “A good boss...” from Susanne Cook-

Greuter's *Maturity Assessment Profile* have been reworked to generate a foundation for more unexperienced raters to assess a stage sequence with equally spaced substages partly up to our *quatrothematic-dirhematic 4.2 stage*. Table 5 shows this exemplarily for Hy and Loevinger's (2014) *Item 19* "Crime and Delinquency could be halted...".

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<b>Item 19:</b>	
<i>Crime and Delinquency could be halted...</i>	
<hr/>	
<b>4<sup>th</sup> Quarter 3.2: Conscientious-Orange</b>	
Surface Level Theme-Rheme: Differentiating-Self-Thematization	Recognition of Boundaries of Other's, Society's or One's Mental Capacities, Inner conflict, Ambiguity or Polarization:
Content Level Category:	<u>Research or Understanding would Lead to Solutions:</u>
Scoring Examples:	<p><i>... more research was done to find out the reasons behind this and hopefully it can be controlled as a result of the research.</i></p> <p><i>... each human would deeply recognize and understand what violence does to him-/herself.</i></p> <p style="text-align: center;">...</p>
<hr/>	
<b>1<sup>st</sup> Quarter 3.3: Integrative-Green (former Pluralist)</b>	
Surface Level Theme-Rheme: Integrative-Adaptation	One Right View Expressed as Mindfulness of or Compassion with Society, Self or Others:
Content Level Category:	<u>Reference to equal opportunity or to prejudice (elaborated):</u>
Scoring Examples:	<p><i>... resources were distributed more equally, and family life was healthier for most people.</i></p> <p><i>... people on their stages had not to fear to fall through the social and cultural net.</i></p> <p style="text-align: center;">...</p>
<hr/>	
<b>2<sup>nd</sup> Quarter 3.3: Integrative-Green (former Pluralist)</b>	
<b>Surface Level Theme-Rheme: Integrative-Differentiation</b>	Critical or Systemic Perspectives on Conscientiousness, Action and Power in Self, Others or Society:
Content Level Category:	<u>If people made more conscious decisions:</u>
Scoring Examples:	<p><i>... people would decide more consciously if they gave power and status and whether they surrendered it at all.</i></p> <p><i>... we were all able to feel those impulses in us without following them. Until this happens, we could do much socially, to at least ameliorate these phenomena. Awareness of Spiral Dynamics could play an important role in this</i></p> <p style="text-align: center;">...</p>
<hr/>	
<b>3<sup>rd</sup> Quarter 3.3: Integrative-Teal (former Autonomous)</b>	
Surface Level Theme-Rheme: Integrative-Integration	Critical Perspectives on Dualities in Self, Others or Society with Temporo-Spatial Relativity:
Content Level Category:	<u>If More Positive Interior Qualities where Developed in People:</u>
Scoring Examples:	<p><i>... we would communicate both according to theory and our personal values, so that we would neither be commanded to follow our subjectivity – independent of circumstance – nor contingent ideas of what is right.</i></p> <p><i>... compassion, love &amp; joy were more abun-</i></p>

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*dant in the hearts of the criminals & delinquents.*

...

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**4<sup>th</sup> Quarter 3.3: Integrative-Teal (former Autonomous)**

Surface Level Theme-Rheme: Integrative-Self-Thematization      Integration or Conflict with the Mental Flow of Life in Self, Others or Society:

Content Level Category: Good Relational Processes were Present or Established:

Scoring Examples:      ... *your children were consistently dealt with, they were encouraged to be self-sufficient, loved, respected, taught to love themselves and given self-worth.*

... *(which is highly unlikely for many generations to come), if healthy unitary values, morals, ethics and the like, can be successfully instilled in each individual from the very beginning of their development (and throughout their development) into adulthood.*

...

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**1<sup>st</sup> Quarter 3.4: Discursive-Turquoise (former Integrated or Construct-Aware)**

Surface Level Theme-Rheme: Self-Thematizing-Adaptation      Deontological or Ethical Considerations about Discourse Between Interiors and Exteriors of Self, Others or Society:

Content Level Category: If we look at our own shortcomings without delusions:

Scoring Examples:      ... *If we are ready – far from any idealistic delusion – to dissect our own delinquent potentials. Which does not mean, that Crime and Delinquency would necessarily find an end (anyways what is delinquency), but at least unconscious crime and delinquency could be halted.*

... *They recognize that within all their difference they are equally faulty, or something is just differences in interpretation, and that any perspective may be processed appreciative and not derogative.*

...

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*Table 5: Excerpt from the Revisited Scoring Manual for Item 19 "Crime and Delinquency"*

Working on the sentence completion test only with a core level assessment seems insufficient since especially the earlier levels do not necessarily express their full grammatical complexity. Here an approach described by Loevinger, Hy and Bobbitt (1998, p.24) in *Technical Foundations for Measuring Ego Development* where a decoding sheet was generated which “is a list of all responses to a single item, rearranged according to the scoring manual being used”, where then according to them, “the scoring manual is reproduced with all sample responses to that item listed under the category, where they belong” (ibid. p.24). Differently said bootstrapping on the basis of the thematic-rhematic expressions of the homeostatic media’s functional surface level. Since our model includes a *Dithematic-Trirhematic 2.3 stage* correlating with concrete operations we did our best to discern which responses at Hy’s and Loevinger’s (2014) E3 Opportunist and E4 Diplomat stages as well as Loevinger’s, Wessler’s

and Redmore's (1970) Delta and I3 more likely corresponded to this or rather to the succeeding *Dithematic-Quatrorhematic 2.4 stage*. Table 6 shows some examples for the new dissection. However, since symbolic-syntactic analysis is compromised additionally in such short sentences quarter judgments might be not as accurate as within regular text production like short essays.

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<b>Item 19:</b>	
<i>Crime and Delinquency could be halted...</i>	
<hr/>	
<b>3<sup>rd</sup> Quarter 2.3: Rule-Oriented-Amber</b>	
Surface Level Theme-Rheme: Integrative-Integration	Comparison of Concrete Integrative Traits of Self, Other or Communities Including Recognition of Reversibility:
Content Level Category and Examples:	<u>Education were Better:</u> <i>... they were taught better.</i> <u>Reversibility and Eye for an Eye:</u> <i>... people who do killing where killed immediately themselves.</i> <i>... people quit doing those types of things.</i>
<hr/>	
<b>3<sup>rd</sup> Quarter 2.4: Conformist-Amber</b>	
Surface Level Theme-Rheme: Self-Thematizing-Integration	Thematization of one's, other's or communities' concrete permanence or autopoiesis:
Content Level Category and Examples:	<u>Parents are Better from the First Day on:</u> <i>... parents are stern with their children from day #7.</i> <u>Punishment were as Intense as Possible:</u> <i>... drugs and drug users are eliminated from the earth.</i> <u>We Make Things Different in the First Place, Change Settings:</u> <i>... we work with facilities (YMCA's etc.) to keep youth of the street.</i> <i>... people cared for the delinquents in the first place.</i>

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*Table 6: Dissecting a Dithematic-Trirhematic 2.3 Stage out of the Opportunist and Diplomat Levels*

Basically, it is not earlier than at the early *Trithematic-Trirhematic 3.3 stage*, the Pluralist, that people start to consistently express their grammatical complexity. Both the *Trithematic-Monorhematic 3.1* and *Trithematic-Dirhematic 3.2 stages*, the Expert and Achiever, tend to restrict themselves to monothematic or dithematic expressions, so that the number of themes and rhemes coincide within their statements. This might be up to the fact that the tool was designed from one of the later stages and to measure earlier complexity appropriately would demand new and less abstract items or rather a question format if one does not want to have people underrepresent their cognitive abilities and thus their personalities and uniqueness.

### 3. Praxis: The New Human University Study

The New Human study included developmental assessments based on the metric of homeostatic hierarchical integration applied to a sentence completion test and Quantitative Electroencephalographs (QEEG) of the first cohort at the New Human University. Some of the participants had already been participating in the beta program of the NHU which had started about six months prior to the opening of the formal classes. A beta form of the Sentence completion test was also given to the beta NHU participants. Those results were not included in this study. Participants of this study are ranging in age from 32 to 74 and include 11 males and 26 females. The main restrictions to the preliminary sentence completion study with the New Human Inventory is the lack of interrater validation. Since we just started with educating scorers and this process is a lengthy thorough one, that also includes the unlearning of culturally conditioned grammatical lenses on text, we are just working on the right teaching and learning methods. Given that the scoring certification program for Cook-Greuter's *Maturity Assessment Profile* takes eighteen months without the necessity to deconstruct ones acquired perceptual bias and reconstruct it in favor of a more natural, transcendental and universal syntactic-semantic judgment we calculate with two years for the first meaningful and sound interrater study.

#### 3.1. Assessment of NHU Population

Each participant was sent an invitation to complete a sentence completion task. The direction for completion sounded as follows. "The New Human Inventory contains 24 sentence-beginnings of various kinds. To the best of your understanding, respond to each of the 24 stems which follow, using your own words. Complete all the stems at one unhurried sitting and respond freely and honestly. Making very quick 'automatic' responses on the form will not be helpful for you in this process. Give it attention. However, there are no right or wrong answers". All participants by this agreed into the confidential use of their data.

The assessment itself then was a five-step process depicted in Figure 16. Sentence completions were assessed for their thematic orientation, before they were, through a rhematic analysis assigned to a stage. Then a first and second half judgment was built on the basis of the symbolic-syntactic field of each response that eventually lead to the sorting into one of the four phases within each stage. The assessments were done in an excel spread sheet which then allowed through a dropdown list, including approximately one-hundred variations of theme-rheme functions, to make a surface level judgment. Ideally core and surface level assessment than coincide. The spreadsheet finally allocated each assessment into one of the Epochs the NHU uses.

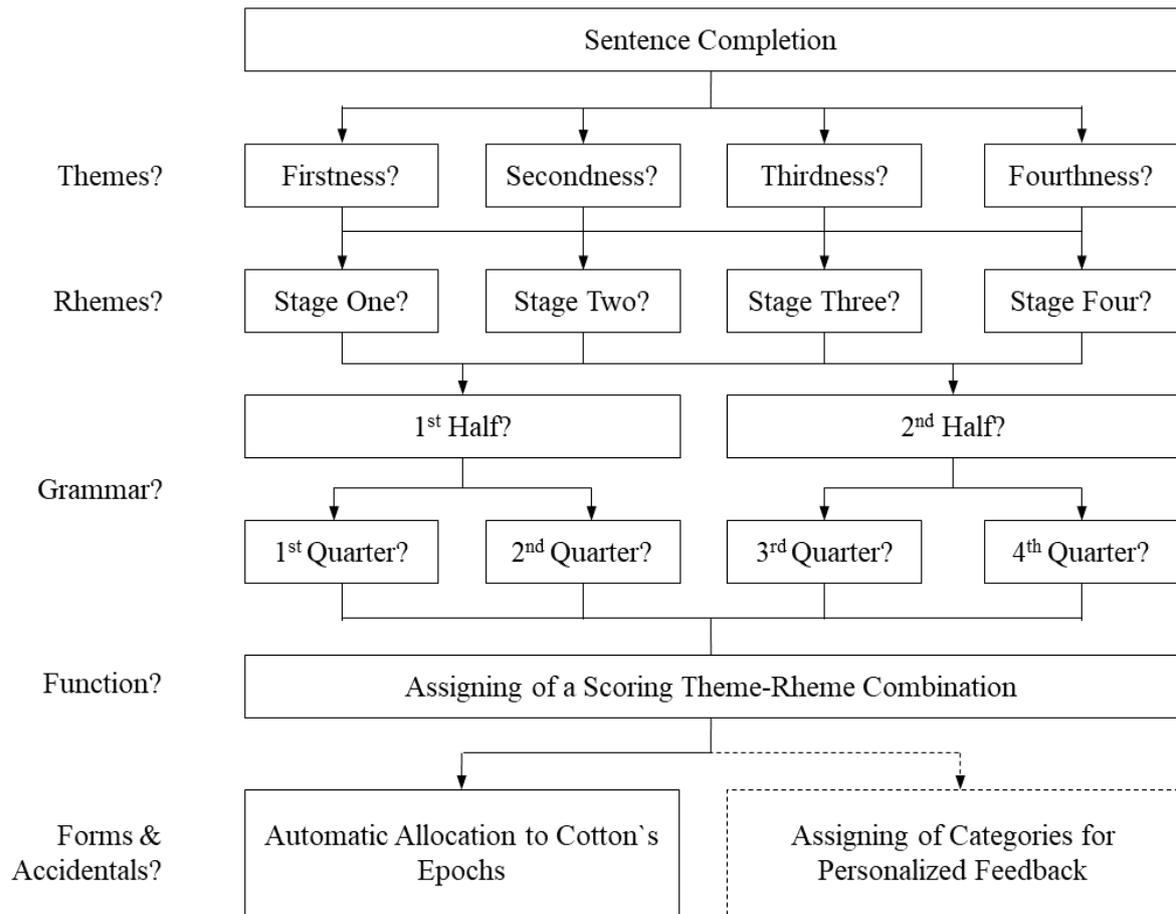


Figure 16: The Structure of Assessing Epochs with the Metric of Homeostatic Hierarchical Integration

The automatic allocation of responses to Epochs worked on basis of a lengthy discussion about the right correlation. Since the Epochs are a concept that, too, sprang from conceptual knowledge of developmental models but basically from Michael Cotton’s intuitive grasp of the state of our societal and cultural predicament and its overlap with stage development they are more fluid than models with explicate metric. But, when Cotton (2018, p.143) exemplarily writes that people moving into *Epoch 6* “are not confined to ‘either-or thinking’, but rather can instantly recognize patterns and interlinking relationships spanning both horizontally in space and vertically in time” one can relate this to one of the functional categories of the *Trithematic-Trirhematic 3.3 stage* in Table 5 namely, we deal here with an equivalence of “critical perspectives on dualities in self, others or society with temporo-spatial relativity”. As one can see in Figure 17 we have started to score early and late versions of each stage starting with the Conscientious, i.e. Achiever stage.

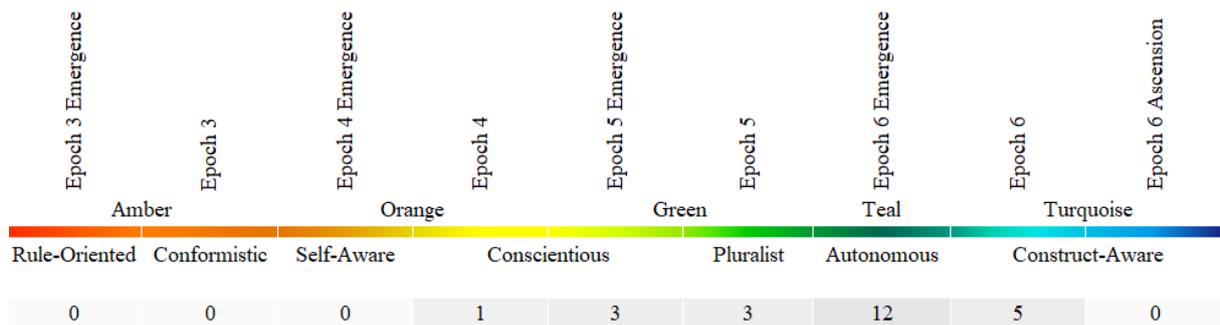


Figure 17: Snippet from the Output-Form of the New Human Inventory for an Early Construct-Aware Scoring

### 3.1.1. The New Human Inventory and Cronbach's Alpha

Since the Model of Homeostatic Hierarchical Integration is meant to be domain general and opted to score any communicative action especially both oral and written verbal statements it is not to far fetched to think about special versions of the sentence completion test, including new stems and therefore newly assessed contexts and domains. But we do not tread new paths when it comes to the revision of number and content of scoring items. Already Jane Loevinger revisited her original handbook which she edited together with Ruth Wessler and Carolyn Redmore in the 1970<sup>th</sup>, so that the subtitle *Scoring Manual for Women and Girls* completely disappeared in the 1990<sup>th</sup> second edition which she co-authored with Lê Xuân Hy (2014). Likewise, in the 2000<sup>s</sup>, the *Harthill Leadership Development Profile* has included additional new stems about teams, time and power in the workplace “to replace older gendered stems (e.g., ‘Men are lucky ...’ ‘Women are lucky ...’) that generate responses with the lowest correlations to overall protocol ratings” (Barker & Torbert 2011, p.46). Their leadership profile now includes 27 Loevinger stems and 9 different stems that set out a more business-oriented perspective on development. Even more recently a derivative of Ego-development, Terri O’Fallon’s STAGES Model, has created new inventories to measure attitudes of perspective within the fields of leadership, love, education, psychological reflection, and climate change (Murray & O’Fallon 2020).

However, to incorporate new items into the sentence completion test might challenge its *internal consistency*. A measure based on the correlations between different stems within the same test or a certain subscale of the test. By internal consistency one destines whether the different sentence beginnings create responses that point towards the same underlying construct. Loevinger and Wessler (1970, p.44) after conducting a study on the first version of the *Washington University Sentence Completion Test* reasoned that it has “a high degree of internal consistency irrespective of degree of previous training” because self-trained raters achieved almost the same results as the constructors of the manual themselves. Their consistency back then reached from 88 to 92 percent. Harthill, too, has conducted a series of six

reliability tests (Torbert & Livne-Tarandach 2009) using the same method as Loevinger and Wessler in 1970. They calculated the so-called *Cronbach's alpha score* where the  $\alpha$  expresses the expected correlation between two tests that measure the same construct. It represents the internal consistency where in general alpha values higher than .8 (80 percent) are considered to satisfactory indicate internal consistency (Schutt, 2004). Torbert and Livne-Tarandach (2009, p.135) report that “they generated a Cronbach’s alpha of .906, a relatively high value indicating good internal consistency that justifies the aggregation of stems into one score reflecting a single action logic”. In the same way Murray and O’Fallon (2020) report an overall excellent internal consistency, for inventories including new stems, reaching from .95 to .97.

Since the internal consistency of the 36 Loevinger stems seems sufficiently proven we were mostly concerned with the so-called “*split-half* rank-order stability of the *ego-level scores*” (Westenberg, van Strien & Drewes 2001, p.482). This means that we first reduced the number of total items in the New Human Inventory down to 24 since this number seemed sufficient given both the available time resources and the possibility of the 18 Item short form for measuring ego-development (Hy, Bobbitt & Loevinger 1998). Then we created twelve new stems and remained with interest in looking at the correlation with the twelve retained original ones – the split-half rank-order stability of the ego-level. According to Westenberg, van Strien and Drewes (2001), Novy and Francis (1992) reported a correlation of .79 for split-half scores, as compared to the correlation of .77 in their study.

Original Stems	New Human Stems
My conscience bothers me if...	Salutogenesis...
People who step out of line...	Our community could be of greater service by...
Crime and delinquency could be halted if...	To handle complexity...
My main problem is...	My breath should always...
The thing I like about myself...	People who are aligned with intuition...
I feel sorry...	My concept of time is...
I am...	A person’s energy...
I just can’t stand people who...	Religion should...
When people are helpless...	When they talk about purpose, I...
A good leader...	Of ultimate concern is...
Being with other people...	I am responsible for...
When I am criticized...	Humans have a right to...

Table 7: Split-Half Protocol with Original and New Human Sentence Stems

Table 7 shows the original and new stems. The New Human stems were derived both from a beta form of the New Human Sentence Completion Test that was given to an initial beta NHU cohort and a sentence completion task for discovering “your authentic self and your soul’s purpose” (Cotton 2018, p.179), which is part of summit four of the 9 Summits of Transformation. We thereby aimed to include an equal number of items that foster responses

revealing all: a student’s cognitive mode or conceptual understanding (e.g. “Salutogenesis...”), his or her morals and preoccupation with character development (e.g. “My main problem...” or “I am responsible for...”), his or her interpersonal or societal concerns (e.g. “Crime and delinquency could be halted...” or “Our community could be of greater service...”) as well as those most likely disclosing the person’s conscious preoccupation regarding spirituality (e.g. “I am...” or “People who are aligned with Intuition...”).

To calculate the Cronbach’s alpha, each stage, a response was assessed at, was translated into a number. These numbers were reaching from 1, for the *Monothematic-Monorhematic 1.1 stage*, to 16, for the *Quatrothematic-Quatorrhematic 4.4 stage*. To pay credit to the fact that the Pluralist and Autonomous Ego-Development stages are substages of the *Trithematic-Trirhematic 3.3 stage*, we included two numbers for this stage. First half assessments were coded as 11 and second half assessments as 11.5. As one can see in Table 8 the internal consistency between both halves of the New Human Inventory was almost perfect. With its .971 it is superseding Westenberg, van Strien and Drewes (2001) as well as Novy and Francis (1992) for up to 20 percent. Additionally, the new stems showed slightly less variance and hence increased internal consistency compared to the original ones. Such a high internal consistency allows to think about even shorter forms of the New Human Inventory to get a fast overview of people’s developmental progress in certain contexts and domains.

	Original Stems	New Human Stems	Difference
<i>Mean Score:</i>	10.41	10.45	+ 0.04
<i>Variance Scores:</i>	0.54	0.53	- 0.01
<b>Cronbach’s Alpha</b>	<b><u>0.9711</u></b>		

Table 8: Split-Half Internal Consistency of the Ego-Level between Original and New Human Stems

### 3.1.2. Sacred We-Space and Stage Distribution at the New Human University

Mascalco and Fischer (2010, p.160) write in the *Dynamic Development of Thinking, Feeling and Acting* that “skill development occurs as individuals differentiate and coordinate higher-order skills and meanings from their participation in joint activity with others. By pulling a learner’s performance beyond that which they can sustain alone, *scaffolding* awakens and directs the process of development”. Scaffolding is a logical conclusion based on Vygotsky’s (1978, ) *zone of proximal development* as “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under [...] guidance or in collaboration with more capable peers”. Scaffolding as the support that allows to work from one’s potential that is still “in an embryonic state” (ibid. p.86), so to say, is something degenerate of a genuineness, occurs

in contexts ranging from mentor-mentee relationships, the learning of skills in organizational systems, or through psychotherapy, and coaching (Mascolo & Fischer 2010). Interestingly even the written examination of skills, like in a sentence completion test, works a scaffold. “When students examine their experience as an object of reflection, [...] they engage in a conscious process of analysis, discrimination, and pattern building”, so Lamoreaux and Taylor (2011, p.97). Scaffolding includes developmental *exoneration* as its opposite side, since “it may also be the case that organizations and institutions in fact punish higher-stage performances”, and punishment, so Commons and Richards (2002, p.164), “usually strengthens behaviors that compete with the punished behavior and therefore maintain or even increase the avoidance of making next-stage behavior”.

Scaffolding and the strongly related non-punitive behavior however necessarily include the presence of more developed persons, so that integration from the social environment can precede. Within the New Human University those attitudes and respective techniques are subsumed under the concept of *Sacred We-Space*. A “field effect that can be leveraged in groups” so Michael Cotton (2018, p.153), and become a space between people “that is not empty but is full of causative information and energy and the WE space can be, and must be, consciously cultivated so that growth occurs exponentially within a group dynamic”. To judge whether or not this sacred we-space indeed fulfills its promise is one orientation point in our research journey to catalyze and measure the new human. Today, we can only depict the population at the NHU and compare it to an estimation of general population. The most widely known numbers addressing the question of adult developmental stage’s distribution throughout society are those from Susanne Cook-Greuter’s dissertation. As Cook-Greuter (2013, p.20) writes, to give a sense of the overall distribution of stages, this 4510 people comprising average “is the most diverse sample available so far. It includes priests and prisoners, accountants and artists, and subjects spanning ages 18-82 with the middle 35-65 being the most represented”.

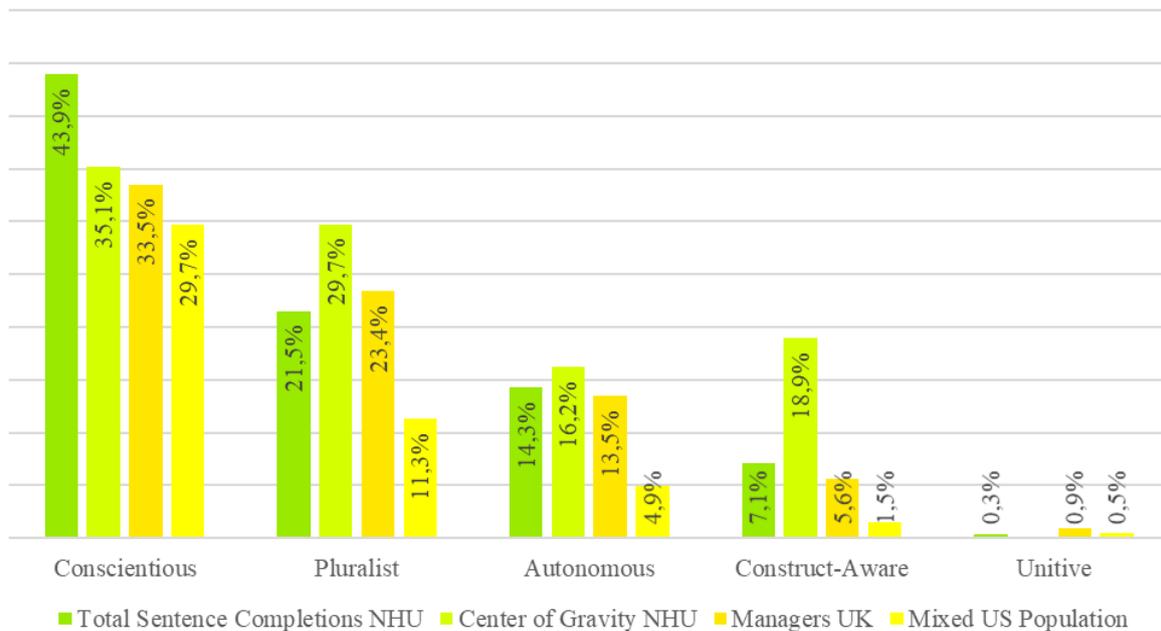


Figure 18: Comparison of the Hew Human Study with General Population and UK Managers

When we look at the percentage of NHU students at each of the adult stages in Figure 18, and compare this sample with the already mentioned, as well as one including 535 managers and consultants from the United Kingdom (Cook-Greuter 2013), we at least can state that the New Human University is outweighing both groups at all stages from Conscientious to Construct-Aware. The only exception was the Unitary stage however, the scoring criteria the Model of Homeostatic Hierarchical Integration applies might be much less prone towards scoring at that stage. As much as the likelihood that one of Cook-Greuter’s ratings is to land at one of the quatorthematic stages is highest when previously given a Unitary assessment, some responses don’t. Like this response on “Being with other people...” that said, that it “is the very substance of life itself. It may be invigorating, stimulating, wearing or frustrating – but is rarely boring. The range of human behavior and interaction is endlessly intriguing” (Cook-Greuter 2010, p.81). Which would include a synthesizing sentence with “the very substance of life itself” and then a polarity with negative traits that nevertheless deter to make life “boring”. The fourth part is merely a nominal statement that sums up the earlier and thus makes it a first Quarter response at the synthesizing trithematic-quatorthematic stage falling under the thematic-rhematic functional category of being able to see “universal humanness or a shared substance” – as much this seems to be one of the rarer recognitions and maybe a sign of spiritual maturity, unitary states and wisdom, but that is a chapter on its own. Notwithstanding this first study at the NHU showed three times as many persons at the Construct-Aware stage – though most of them where just entering this stage – than even the sample of managers and consultants in the UK could put forward. Since the NHU attracts and has built

such a rich community of late stage adults, the proposed effects of scaffolding that drive students towards the optimal proximity of their development through a developed community are very likely.

### 3.1.3. Rethinking Horizontal Decalage and the OGIVE Rule

Loevinger (1998, p.78) writes that perhaps “the pre-eminent claim of the WUSCT is that the concept of what it measures, and the method of measurement evolved together. The intertwining of concept formation and measurement technique” was something she perceived as completely new for the field of psychology. It is quite similar for the model of homeostatic hierarchical integration through communicative action. As we have shown the structures and function of the respective media are the measures themselves. Considering this it is standing to reason about a new mechanism to discern a person’s *center of gravity*. Center of gravity means according to Wilber (2000b, p.92) the place the self is hovering around, since when it “moves through a basic level of the Great Nest, it goes through a fulcrum (or milestone) of its own development: it first identifies with a new level, then disidentifies with and transcends that level, then includes and integrates that level from the next higher level”, which finally is the new center of gravity.

This center of gravity is determined in ego-development theory by assigning a score to a protocol on the basis of the entire test as opposed to rating only individual items. This score then is called the Total Protocol Rating (TPR). When using the Washington University Sentence Completion test, one uses an OGIVE rule, which is an empirical cumulative distribution function which makes the “arriving at a total protocol rating constitute a unique algorithm” (Loevinger 1998, p.78). The model of homeostatic hierarchical integration hypothesizes two ways of resolving the use of a statistical rule. The first one was derived from the NHU study and is based on the assumption that though “decalage is the normal modal state of affairs” (Commons 2008, p.3) and uneven development expressed in each sentence completion test, there is a structure of the whole. This structure was made visible by assessing with the help of four phases or quarters each stage.

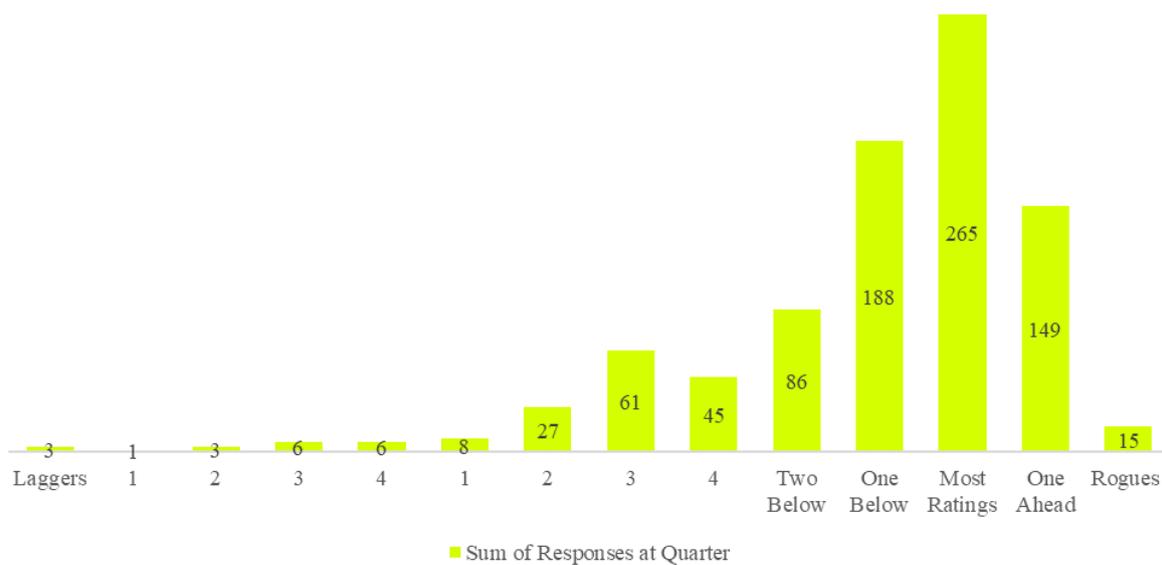


Figure 19: Distribution of Rated Stems through Four Quarters

Figure 19 shows the distribution of all rated responses in the NHU study. The ratings were put on top of each other so that the quarter including most responses summed up. Then we get a distribution curve that in sum of the 37 protocols showed a curve with some negative skewness and a second peak on the left side of the kurtosis. This second peak was in the same quarter as the main peak but one stage earlier. Almost all protocols looked like this with very few having one item rated more than a quarter ahead of the culmination point of the curve. There was one protocol with three responses rated two quarters ahead of the peak and one with two responses ahead. Only one protocol showed an item rated three quarters ahead of the gravitation point of the distribution. It is obvious to assign a total protocol rating that is based on the stage wherein this main quarter resides, at least if one assumes like Jane Loevinger (1998, p.78) that we can yield to get “a picture of the persons at each level, in coherent narrative, in their own words, ‘their own voice’ rather than in some abstract, textbook terms”.

A second approach that should be considered, for example when the dominant quarter is the last and fourth one within a stage, is to use Commons’s and Richards’s (2002) research into *Organizing Components into Combinations*. Since we had several protocols that showed both strong Achiever and Pluralist, hence trithematic-dirhematic 3.2 and trithematic-trirhematic 3.3 stage grammar, we recognized that those protocols can further be divided into being at a certain point in transition. With transition we don’t mean the transitioning of Kohlberg’s transitions, where we already showed that those can be seen as stable subphases of a larger stage. Either, we don’t mean transitioning stages in ego-development, since Hy, Bobbitt and Loevinger (1998, p.26) point out that there has never been any evidence that “such ‘tran-

sitional' ratings" like Cook-Greuter's 3/4 Expert and 4/5 Pluralist stages "were in fact less stable than others" (ibid. p.26): "data suggested, to the contrary, that those between stage ratings are as stable as any others". Rather we want point to the fact that the movement from one stage to another indicates to precede through the same overall logic that we have already shown for growth through tiers, stages, and the phases per stage, that were often mistakenly depicted as transitions.

At the first step the demands for a new stage are perceived and as a first step the person tries an alternative (A|B), afterwards relativism is a key word in the "either... or" ( $A \vee B$ ) phase where "one sees the possibility of solving a problem, but does not necessarily know the right means of doing it" (Commons & Richards 2002, p.164). At step three creativity comes into play and makes a "both... and" ( $A \wedge B$ ) possible until in the "the fourth conditioning step (A with B), inclusion and exclusion templates are finally coordinated. One may feel glorious and ecstatic for combining right components successfully", so Commons and Richards (2002, p.165). This fourth step resembles oneness or self-thematization ( $A \cap B$ ).

Closest to that process is to use two of the five scoring rules proposed by Loevinger and Wessler (1970, p.115). Namely to discern whether a "combination of two or more elements in a compound response generates a more complex level of conception, rate the response one-half step higher than the highest element", which is *Rule 2*, or where "the combination of ideas in a compound response does not generate a higher level of conceptual complexity, rate in the less frequent category or rate in the higher category" (ibid. p.116), which is *Rule 3*. When a person has passed into the fourth step, *Rule 1*, the normal scoring with the manual is more easily possible again.

A B	People who step out of line... " <i>are behaving in opposition of what I would think they should be doing or saying, how I think they should be behaving.</i> "	A fourth quarter Achiever response showing awareness of only awareness of something as opposition.
<b>Rule 3: The Compound Response Does Not Generate a Higher Level of Conceptual Complexity</b>		
$A \vee B$	When I am criticized... " <i>I either feel misunderstood or I feel thankful for the enlightenment. It depends on if I am in agreement of the criticizing or not.</i> " A Human has a right to... " <i>live in liberation and freedom to live how he or she chooses. And at the same time no human has the right to suppress or harm another human or the planet.</i> "	Expression of relativism within a fourth quarter Achiever structure expressing first awareness of Pluralist "both... and" insofar both is possible or has to be considered.
$A \wedge B$ 1 <sup>st</sup> Step: Smash	The thing I like about myself... <i>My passion for life, for deep connect with others, for continued exploration of both my inner and outer worlds and.... I also like my healthy genes.</i> I am... " <i>that I Am, I Am a living prayer, I Am perfectly aligned with Divine Will, I Am Truth, I Am Love, I Am One with All that Is, I Am, I Am,</i>	Throwing together of a lot of concepts important at late Achiever without any compounding that generates complexity but in the multitude of perspectives already beyond Achiever.

<i>I AM.</i> "		
<b>Rule 2: The Compound Response Generates a More Complex Level of Conception</b>		
A $\wedge$ B 2 <sup>nd</sup> Step: Template	My conscience bothers me if... <i>"I fail to consciously recognize Spirit in myself &amp; other, and if there is a lack of integrity in my thoughts, words and actions."</i>	Two combined fourth quarter Achiever responses still with locative grammar and instrumental categories.
A $\wedge$ B 3 <sup>rd</sup> Step: Solution	My concept of time... <i>"currently limited by linear conceptions, and yet I am witnessing an expansion of the relevance of now as well as the diminishing of past and future anxieties."</i>	Expressing almost tensionless an Achiever tension and an opposite so that a Pluralist "both... and" is almost formed.
<b>Rule 1. A Normal Match of the Completion with one of the Listed Category Titles</b>		
A $\cap$ B	When I am criticized... <i>"I see it as an opportunity to grow and expand. I know I always have both a choice and responsibility for how I perceive it and how I can use it."</i>	On the surface much simpler than the earlier examples however, including an awareness of relativity of perspective typical for the 1 <sup>st</sup> quarter Pluralist that then can give rise to hermeneutics based on double loop learning, critical review of assumptions etc.

Table 9: Exemplary Application of a Dialectical Model of Stage Transition

Table 9 depicts the transition phases on basis of three protocols. The first mainly reached up to the smash step while the later included responses up towards the resolution of "both... and" which then could give rise to stable Pluralist. The third protocol was used as an example for the fourth move in the dialectic process. However, as far as the offered hypothesis is right, protocols including this step normally already signify a new center of gravity by including 2<sup>nd</sup> Quarter responses of the new stage and a peak in the first quarter. The assigning towards stages then can happen based on the rules established by Loevinger & Wessler (1970) which are upscaled towards assigning a *Total Protocol Rating*. Ideally the applicability of *Rule 2* is decisive and guides attention in the direction of already compounded responses expressing higher complexity, though those might still exhibit a person being in the process of disidentification of the earlier stage, visible through thematic-rhematic orientation, or accommodation to new schemes, visible through new emerging syntactical structures.

### 3.2. LORETA Correlates of Development

#### 3.2.1. Methods: Participants, Equipment, and Scoring

From twenty-four participants of the NHU ranging in age from 32 to 74 and including 8 males and 16 females Quantitative Electro-encephalographs (QEEG) recordings were collected within 2 months of completion of the Sentence Completion Tests (SCT).

The QEEGs were collected on site during the week of training for the NHU. All QEEGs were recorded prior to 2 pm central standard time. Participants were asked to wash hair thoroughly and not use any product in their hair. They were also asked to abstain from caffeine for at least four hours prior to recording. A Deymed amplifier (TruScan Class 11a, type BF Model: EEG 2/32) was used with Tru Scan acquisition (Version 7.4) program with filter

notches at 60hz. Deymed electro cap which records at the 10/20 international sites with linked ears reference and FPz ground point was fitted to individual head size. Two recordings for each participant were completed. Ten minutes in a non-stimulated state with eyes open and ten minutes with eyes closed. Participants were asked not to meditate during these recordings. They were monitored and coached for muscle tension patterns and eye movements and other artifacts. Recordings took place in a private office at the NHU location. This recording was considered the baseline recording.

All QEEG data was individually analyzed through the Neuroguide QEEG analysis program (Neuroguide deluxe 3.0.6 and Neurostat 3.0.6). All recordings were reviewed by hand, artifacts were identified by the automatic artifacting program and then reviewed by the BCIA certified examiner. The Neuroguide program then eliminates all artifacts from the complete record which is then analyzed through a variety of metrics as will be described in the results section (Thatcher R.W. 2016).

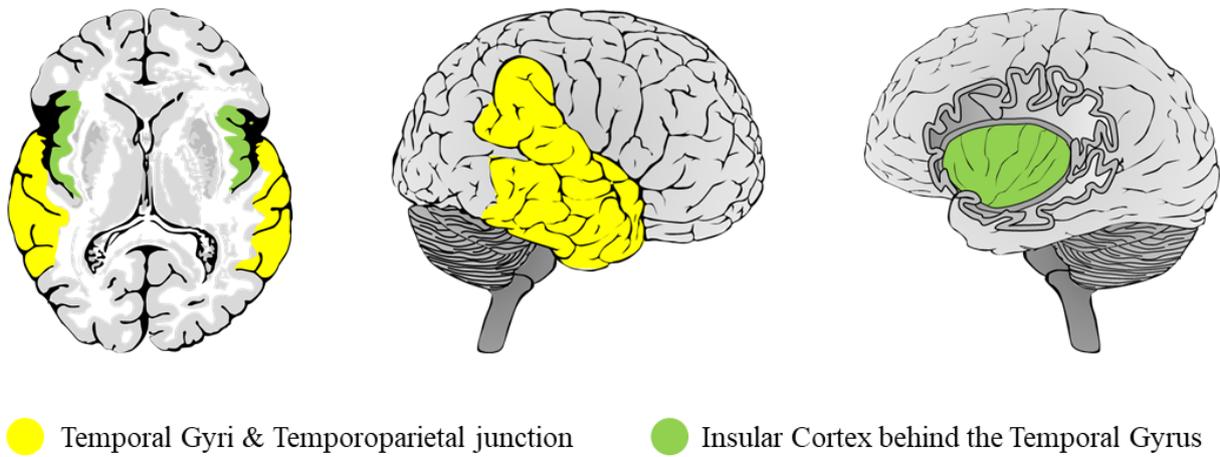
Prior to recording participants were given an informed consent document that included voluntary participation in the research study. A brief historical interview was conducted. This included date of birth, handedness, history of any head injuries including motor vehicle accidents, concussions, stroke, brain surgeries, traumatic brain injuries, history of any medical or mental conditions that require medications or treatment, history of spiritual or meditative practices, history and frequency of current spiritual practice.

Each participant was scored using the Sentence Completion Test scoring procedure described above. Participants were then placed within a category of ego stage development. Categories included the following: Early to Mid-Achiever, Late Achiever, Transition towards Pluralist (included participants enacting 1<sup>st</sup> Quarter of the 3.3 Trithematic-Trirhematic stage completions only and strong Achiever), Pluralist (including participants enacting 2<sup>nd</sup> Quarter 3.3 Trithematic-Trirhematic stage and two or less 3<sup>rd</sup> Quarter 3.3 responses), Autonomous and Later (1<sup>st</sup> Quarter 3.4 Trithematic-Quatorrhematic stage called Construct-Aware in Ego-Development Theory). Of participants who completed both the QEEG and the SCT, three were placed in the Early to Mid-Achiever, three were placed in the Late-Achiever, five in the Transition group, five in the Pluralist group, five in the Autonomous group and two in the Construct-Aware group.

### 3.2.2. Results of the Developmental Electroencephalography

Each group was analyzed with Loretta group descriptive statistics. Changes in current source density shared variance were identified between groups. This means, we firstly depict the overlap of extracellular electric potentials recorded in a certain frequency, the so-called

brainwaves, within each group's participants and then secondly depict the intergroup variation in energy levels around the cortex.



*Figure 20: The Temporal Gyri and the Insular Cortex*

Since a large part of this paper dealt with the not only anecdotally true idea that later stages usually correlate with increased language complexity, we directed the focus of the Loretta analysis in this preliminary study towards the temporal gyrus. Several studies have suggested that the temporal gyrus in general, including its upper, middle and the inferior section as well as the temporoparietal junction, is involved in several cognitive processes including language and semantic memory, as well as visual perception and multimodal sensory and semantic integration (Whitney et al. 2011; Onitsuka et al. 2004; Huroki et al. 2006). The temporoparietal junction is the upper, dorsal part towards the top of the head, of the yellow marked part in Figure 20 – including for simplicities sake the inferior parietal gyrus in our depiction. While the superior, middle and inferior temporal gyri are somewhat above your ear and below your parietal lobes in the lower half of the brain, the inferior parietal cortex and the temporoparietal junction are located wider above and slightly behind your ears. The middle temporal gyrus is located on the lateral surface of the temporal lobe, ventral, which means opposite the back towards the belly, to the superior temporal gyrus. The inferior temporal gyrus is located on the lateral and inferior surface of the temporal lobe and even further below than the middle temporal gyrus.

If one looks from the transverse or axial plane perspective at the electromagnetic activity of the brain and dissects it at the height of the temporal gyri it is not far to seek the insula as another special foci of interest. The insula which is located within the fissures separating the temporal lobe from the parietal and frontal lobe is a neighbor of the inferior temporal gyrus. The insula has been studied in correlation with increased gray matter density in long term meditators (Lazar et. al. 2005) and is considered highly integrative (Craig 2009; Bechara &

Naqvi 2004). This means that it gets input from almost all parts of our brain and therefore is thought to be crucial for our subjective emotional and physical experience.

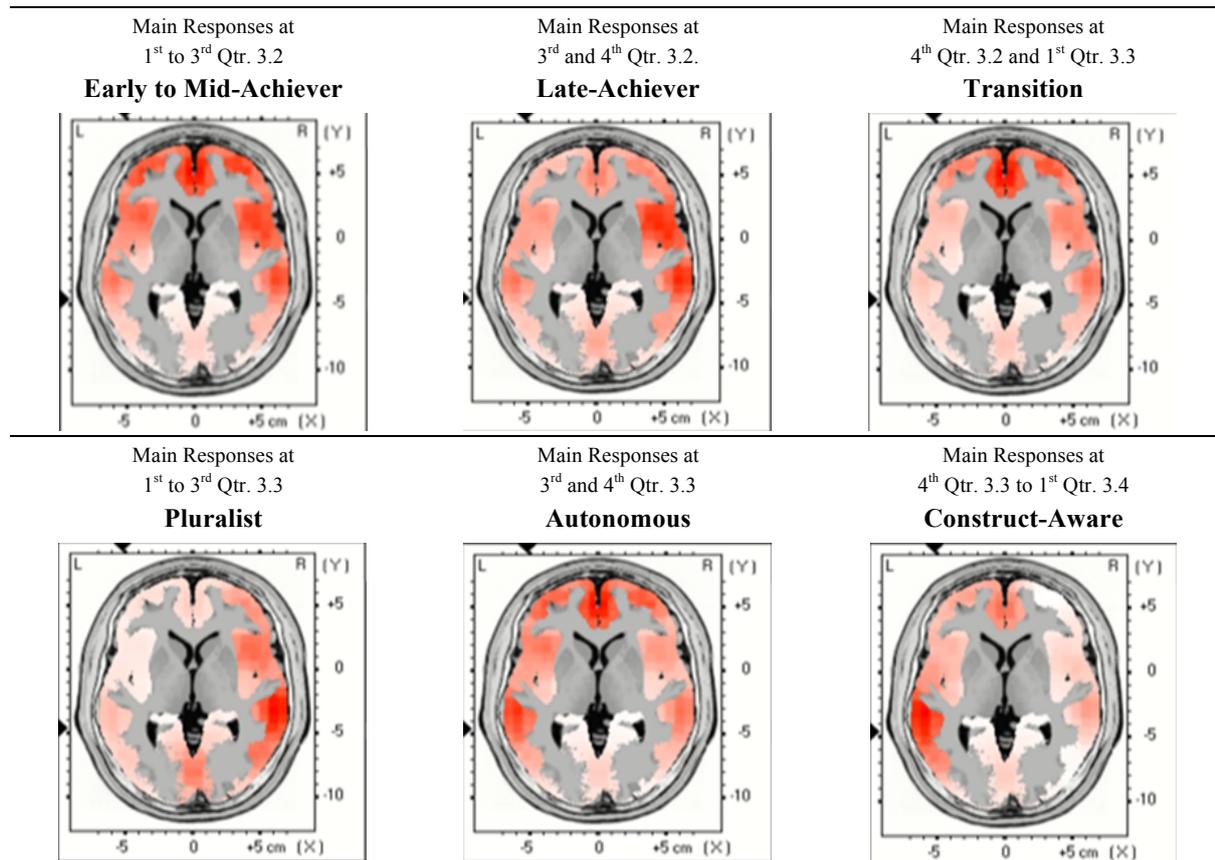


Table 10: Shared Variance for Middle and Inferior Temporal Gyrus and Insula Area at 40hz

Table 10 shows the overlap of gamma activity and the different loci of its highest concentration for each of the six marked-out NHU student groups. As we can see the *early to mid-Achiever* group shared variance shows apparent higher current source density trending from right hemisphere to left, with greater concentration in the right hemisphere towards the frontal cortex. Lower concentration of gamma was seen in the left temporal inferior temporal gyrus and middle temporal gyrus areas including the insula. *Late Achievers* show an increasing trend of current source density in the 40hz range towards the left hemisphere. Looking into the medial temporal and inferior temporal gyrus areas we see a slight increase in source localization of 40hz in that area. In the *Transition* group, we see again a trend towards more current source density moving into the right hemisphere and increasing in the middle and inferior temporal gyrus area.

The *early-Trithematic-Trirhematic 3.3 stage*, respectively the *Pluralist* group, shows an increasing concentration of source density in the right hemisphere medial and inferior temporal gyrus areas, whereas the *late-Trithematic-Trirhematic 3.3 stage*, which is the *Autonomous* group again shifts to higher concentration of 40hz in the temporal area of the left hemi-

sphere. The *Construct-Aware* group shows a continuation of increase in 40hz gamma-wave-activity in the temporal area and in the temporoparietal junction in the left hemisphere as well.

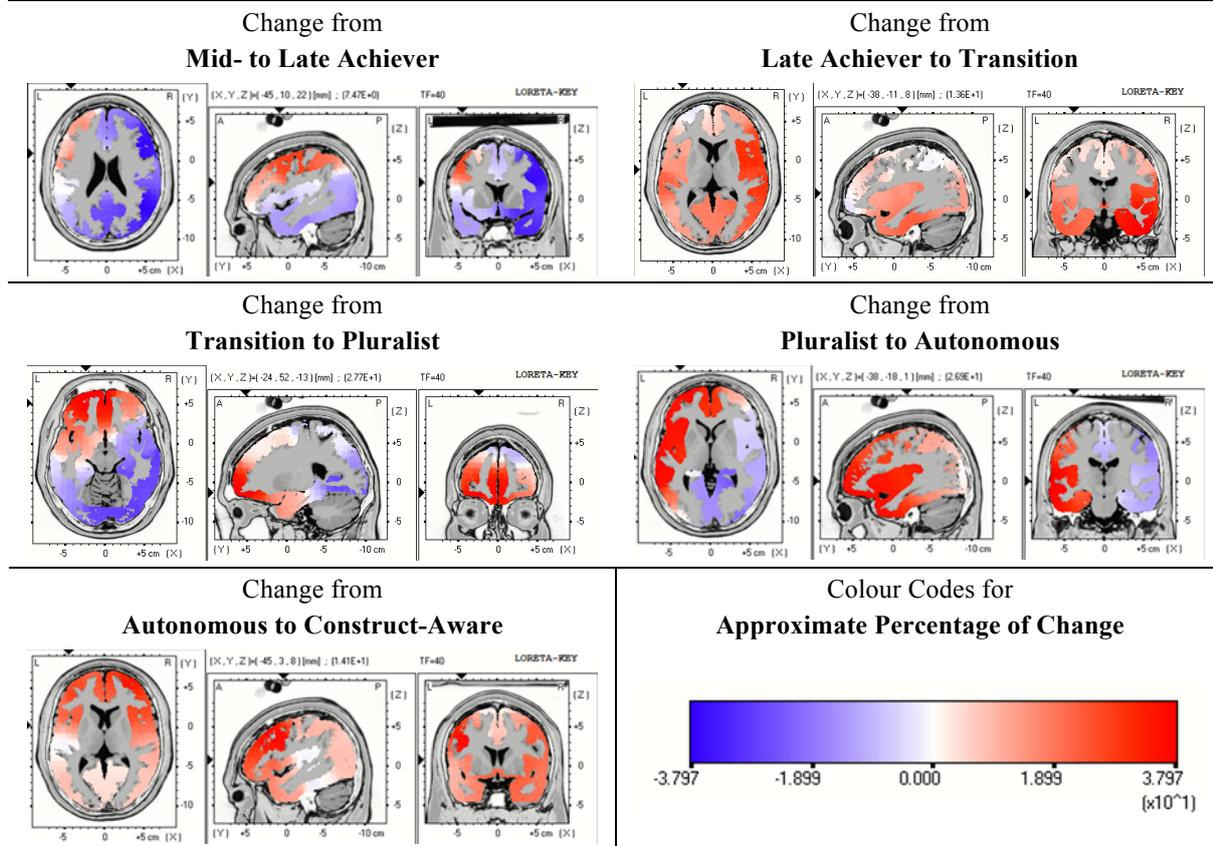


Table 11: Percent Differences between the Stage Groups at the NHU

Table 11 depicts the averaged differences between the stage groups from *mid-Achiever* up to *early Construct-Aware*. The blue shade implicates a relative decrease in 40hz gamma-band activity while the red color indicates a relative increase.

### 3.2.3. Discussion and Future Perspectives

Our focus within this study was due to restricted time-resources exclusively directed to gamma-band-activity. Emergent gamma lies within the spectrum of 30 to 42hz. In our preliminary study we measured up to 40hz. This frequency is considered to be the fastest brain activity and responsible for cognitive functioning, learning, memory, and information processing by “creating a global and exclusive availability for a given stimulus, which is then subjectively experienced as conscious” (Dehaene, Sergent & Changeux 2003, p.8520). Just think of the game Tetris. When a concept assembles the mental *tetrominos* – occasionally known as tet-rads, the blocks used in every known Tetris game – so that they are locked completely, in a manner that leads to the completion of one or more horizontal rows of blocks, there comes a *line clear moment*. All tetrominos are synthesized into bright light disappearing as a pattern recognition: respectively in our minds a pattern once completed drops down or ascends into

awareness and is able to then proceed to synthesize more complexity into a self-aware subject-object equilibrium.

Likewise for Giulio Tononi (2012, p.296) in his *Integrated Information Theory* of consciousness, the unity of our subjective experience depends on the degree of integration: “every experience is whole, and the entire set of concepts that make up any particular experience – what makes the experience what it is and what it is not – are maximally interrelated”, but the whole differs from the information generated by its components; it so to say includes the *line clear moment*, where a “local maximum of integrated information is indeed identical with consciousness” (ibid. p.309). Therefore, one might hypothesize that the discovered increase in gamma activity is a necessary part of synthesizing processes in the brain that is directly related to integrated information and homeostatic hierarchical integration. At later stages of cognitive complexity, it could serve to increase identification of complex information into patterns or associations, thus synthesizing complexity into pattern recognition.

As we have shown, there is a movement from *early Achiever* to early *Construct-Aware* that is driving the gamma activity towards the left hemisphere. In the same way the movement from early to late stage, both in the *Trithematic-Dirhematic 3.2 stage*, the Achiever, and in the *Trithematic-Trirhematic 3.3 stage*, including Pluralist and Autonomous, can be observed to pass along an identical energy gradient. Convenient since moving this from a mere observation towards some significance is that Kurt W. Fischer (2008, p.140), the founder of the *Brain, Mind and Education* program at Harvard University, hypothesizes in *Dynamic Cycles of Cognitive and Brain Development* that “gradually over several years the leading edge of growth of connections moves around the cortex, starting with the right hemisphere, where it becomes more local over time, tuning shorter connections. Halfway through the cycle [...] it moves into the left hemisphere”. This neuronal organization cycle for him is related to the nested network hypotheses. As much as the Model of Homeostatic Hierarchical Integration is fractal, for Fischer (2008, p.141), the cycle for growth of networks within each stage “is nested within a larger cycle of growth of energy, coherence, and other brain characteristics that relate to tiers”. Since the left hemisphere is associated with creative combination processes (Gonen-Yaacovi et al. 2013), to see left hemispheric gamma activity during our proposed third and fourth stages of thirdness, is not surprising either, since the third and fourth phases within the tiers of first- and secondness were considered as those with the inventive means by Piaget (1956) as well as Piaget and Inhelder (1958).

Too, Goldberg Elkhonon (2009, p.268) writes, that “the right hemisphere, the novelty hemisphere, is modified by experience at a much slower rate than the left hemisphere, the hemi-

sphere of established cognitive routines”. The left hemisphere for him has a higher learning rate than that of the right hemisphere. However, the more volatile, rapid fashion of information updating in the left hemisphere is less able to the first and second functions of homeostasis *adaptation* and *differentiation* as negation, whereas “the slow-changing right hemisphere is better suited for dealing with novelty precisely because it contains an averaged default representation capturing certain shared, and thus poorly differentiated, features of many prior experiences” (ibid. p.268). Negation, for Elkhonon (2009, p.122f), within the right hemisphere can be seen as the seat of both adaptation and novelty because it is “the seat of negative affect”, so he speaks, and “the negative affect drives novelty seeking” and goal orientation.

Hence, while the right hemisphere is associated with processes of path generation, that is, abilities to propose, develop, and temporally maintain move-alternatives in the course of planning and goal achievement (Goel & Grafman 2000; Grafman et al. 2005), views which are *integrative* and deal with contexts and “partially ambiguous goal states [...] with a higher demand on building up a mental representation of the encountered problem situation in terms of identifying, matching, and integrating relevant information pieces” (Kaller et al. 2010, p.314) is considered to be left hemispheric. Too, Michael S. Gazzaniga’s (2000) well known research on split-brain-patients leads to the proposition of a left-hemispheric interpreter that attempts to assimilate information into a comprehensible whole – it works disjunctive and in regard to hold both, the particular and universal. Furthermore Perner and colleagues (2006) recognized that the temporoparietal junction as well as the middle temporal gyrus typically active during tasks of cognitive empathy and perspective-taking are dissociated into processing perspective differences for mental and non-mental objects in the left hemisphere while the right hemispheric counterpart is specifically associated with processing mental states like belief. This could be the underlying mechanism between incomplete, hence right-hemispheric, and full, hence left-hemispheric, reciprocity.

Further supportive of the circular movement is an encephalographic leadership study done by Balthazard and colleagues (2012, p.255) who showed that parts of the left hemisphere with longer phase shift duration “are positively correlated with transformational leadership [...] [as this] allows greater recruiting of neurons, and generally, more neural resources available to solve the tasks at hand”. Similarly David Rook and William Torbert (1998, p.23), the inventors of the *Harthill Leadership Maturity Framework*, showed that organizational transformation and development is a function of leadership maturity: “as theoretically predicted, ‘learning leadership’ that intuitively uses power in a mutual, transforming manner begins at

the Strategist stage and can help an organization transform through earlier stages”. The Strategist being a correlate of the Autonomous, and hence the *trithematic-dirhematic 3.3 stage*, showed significant left hemispheric gamma-activation that is correlated with longer phase shift duration, respectively attention span (Mably & Colgin 2018).

The seeming fact that especially right hemispheric insular cortex activity seemed more center staging at the Achiever stage might pay duty to the fact that the homeostatic hierarchical integration at this stage still largely relies on Piagetian formal operations. And those are part of secondness, the realm of concrete vital essences. Like Roman Angerer (2018, p.157) in *the Human Brain in Everyday Live* writes “taking a deeper look at empathy, we come to understand that the insula enables us to link suffering and moods with concrete reality, yet for more elaborated, subtle forms of empathy like idealistic sympathy and cognitive benevolence, which spreads beyond the boundaries of our own concrete past experiences and well-known people, a performance we are only capable of after we have left the concrete tier and started to enact a world centric stage of moral development, the anterior cingulate plays a crucial role, as it, for example, helps us to mitigate criminal sentences by taking into account situational and emotional variables, whereas insular activation is only crucial for concrete norm compliance”.

Future considerations into investigation of brain functioning and differences between stages will include functional connectivity within the default mode network (DMN). Which includes areas of the medial prefrontal cortex (mPFC) and the posterior cingulate cortex (PCC) and precuneus connections and oscillations between those areas of the brain. Other considerations will be the functional connectivity of the salience network primarily composed of the anterior insula (AI) and dorsal anterior cingulate cortex (dACC). More data is needed to determine pattern oscillation as well as functional indicators through all frequencies in the brain. Other methods of analysis may include Independent Component Analysis (ICA). Future studies will delve into control group comparisons, including independent variables that influence growth through the stages like Ralph W. Hood’s (1975) *Mystical Experience Scale*.

Hopefully this will add further to the insights already generated in educational programs developed by Dr. Michael Cotton and his colleagues at the NHU. Participants who completed a precursory program to *The New Human University* already showed improved brain coherence, communication between lobes and hemispheres of the brain, as well as higher amplitude and power trending towards the left prefrontal cortex after practicing a contemplative which is a forerunner of the NHU Summit One. Table 12 shows two recordings done about 20 minutes

apart showing the change moving from right to left frontal cortex with increasing power in the 40hz within surface measures from .084 to .33.

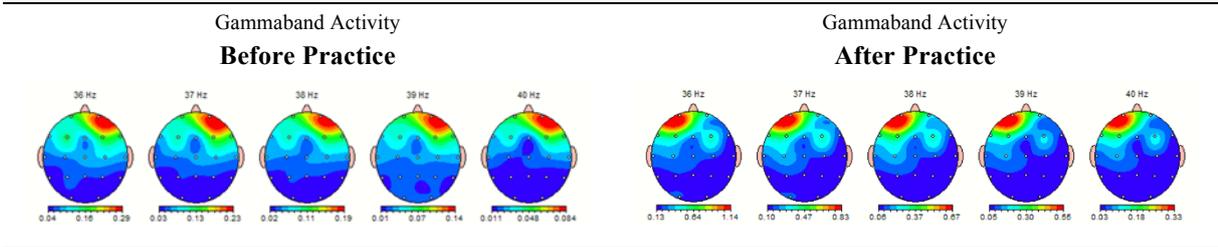


Table 12: Change in Gammaband Activity Due to a Contemplative Precursor-Praxis of Summit One

We interpret this phenomenal result of this contemplative technique as a preliminary ‘but powerful indicator, that *the NHU, Source Code Meditation, the 9 Summits of Transformation* and *Sacred We-Space* lead into the newly emerging *Epoch 6*. They present a meta-modern form of spirituality that moves us towards *Unitary Evolutionary Enlightenment*, where “our reality integrates into a seamless whole incorporating 13.8 billion years of evolution as a single process”, so Michael Cotton (2018, p.162), a hallmark which is “the experience of the transcendent self, united with your authentic self/soul essence, united with the entire world of manifestation set within a meta-evolutionary context”.

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