0 Cognition

Approach to all objects is by cognition.

Udo Frentzen 2016/18

0 1 Remarks

1a) Definition
Cognition is transformation of forms of being into forms of consciousness.
Its components are therefore the object, the subject and a relation between them.
At center stands the item at hand throughout all scientific, contemplative and aesthetic research.
It is a mental-psychic-biological constructed representative model of an object.
Representation in the central nervous system is by bio-chemical-electro-magnetic states and processes.
Preconditions are
1a1) Physiological autonomy of body and mind with freedom of truth.
1a2) Cultural competence in language, mathematics, logic, method and data processing.
1a3) Approach with circumspection against a background of vast non-knowledge as most objects awaits a long history of corrections, additions and further approximations. 90% of truth is truth finding.
1a4) Approach with courage to break through inhibiting factors like special interests of cognition, publication and application as values are always in conflict with pragmatic 'statesmanship'.

1b) Intent
Main intent is to shed light on an object and to investigate further for a more accurate description.
Epistemic research goals are knowledge and avoidance of errors.
Sound facts, assumptions, working hypotheses, methods and skills lead to an increase of knowledge.
It is added by a constructive environment, administrative structures and technical devices.
Errors multiply along publication to teaching to applications into gross inhibiting factors.
Scaled up intent is promotion of the spirit of man and integrity of nature.
Increase in overall comprehension with responsibilities, means of enlightenment and sound results will gain the capability for long term survival in changing cosmic environments.

1c) Data input
Sources are are questions and searches. Basics are: What is nature? Who is man? Who is God?
The first two steps of focus and observation serve as initial data input.
They are the first bottleneck and its tools have to be studied and practiced in all human activities.
All subsequent steps of mental and technical processing rely on it.
Steps handling the object are worked off sequnecially and are mostly non-interchangeable.
Subjective factors have to be considered throughout simulataneously.
Progress run mostly from the unknown to the known, simple to complex and illusionary to possible.
Its pragmatic status can be object surpassing, adequate or inhibited.
Its theoretical status is open ended. There is no definite, cognition exhausted object.

1d) Data domain
It reaches in place from the micro- to macro-cosmos.
It reaches in time from the beginning to end of the universe.
It reaches in scope throughout all layers of reality, the physical, psychological, mental and spiritual.
Its limits are set by observer's position, precision of mental and material tools, conditions of space, time, matter, forces, characteristics, relations and codetermining factors.

1e) Data requirements
Every object entails at least an ethical, natural and human dimension and with it universal framework and object standards.

1f) Author's position
The author's position is reflective, defensive, hopeful, literary description and evaluation.
Definition of truth for the essay is: Have all factors of cognition been considered?

0 2 Standards

2a) Values
Man adopts for free self-interpretation and direction to his actions a self-set defining value and standard: human dignity, being universal, invariable, inalienable, codifiable, falsifiable and livable.

2b) Value classes
2b1) Universal values apply to the past, present and predictable future on a global, historical scale.
2b2) Existential values protect basic human rights to life.
2b3) Humanitarian values protect basic personal rights to growth.
2b4) Framework values are
  b4,1) Ethically: unity of mankind, justice, due process and conflict solving.
  b4,2) Naturally: integrity of nature.
  b4,3) Human: collection, management, expansion and application of knowledge.
2b5) Object values are
  b5,1) Ethically: non-violence, accuracy, completeness and transparency.
  b5,2) Naturally: application by reason.
  b5,3) Human: application by maturity.

2c) Value scale
2c1) Primary universal spiritual, human, natural values are love, dignity and integrity of nature.
2c2) Secondary universal spiritual, human, natural value is truth.
2c3) Tertiary and primary value for society is unity of mankind. It is based on equity and justice.
2c4) Fourth and humanitarian values are freedoms, emancipation and common welfare.
2c5) Professional standards are guidelines of state of the art field knowledge and praxis.
2c6) Item specific standards are bench marks of properties and performance.

2d) Truth
Investigating an object, truth is in respect to God a comprehensive analysis towards innocence, in respect to man and nature a comprehensive analysis in spirit of man and in integrity of nature.
Their research adding each other, they stand on a linked, equal, balanced and cooperating level.
Paradigms, modelled research processes, gain by theoretical, methodological and environmental assumtions and conclusions cognitive success with valid knowledge.
2d1) Qustioning states the object of study, epistemological intent, assumptions, methods and tools.
2d2) Observation is by intruding, exhausting search with professional accuracy.
2d3) Denotation and description adhere to
  d3,1) Equivalence of object, term, word, sign and transmitted message.
  d3,2) Complete description of an object in its complexity with all features like positive-negative properties, applications, consequences, risks and dangers in balanced dimensions of nature, man and God.
  d3,3) Confidence of accuracy can be cartesian ideal, corresponding, abductive or pragmatic.
2d4) Deliberation, interpretation, evaluation, documentation and propositional support adhere to internal subject and external object true treatment.
2d5) Publication and public discussion adhere to
  d5,1) Refutation of corruption and enlightenment of issue and audience.
  d5,2) Address of all major present day issues.
  d5,3) Languages of His Word in theology, poetry in humanities and mathematics in natural sciences.
  d5,4) Management of knowledge by transparently collecting, reviewing, storing and spreading results.
2d6) Problem solving, conflict solving and development adhere to
  d6,1) Service, conciliation and amending for the wellbeing of man and nature.
  d6,2) Development of cognitive potentials by
    d6,2,1) Reduction of inhibiting factors like pseudo-mental products.
    d6,2,2) Successive heuristic step by step approximations of descriptions to reality.
    d6,2,3) Raising of standards towards expanded capabilities in scope, range and accuracy.
    d6,2,4) Enlargement of truth's and ethics' freedoms.
    d6,2,5) Enlargement of overall comprehension from responsibilities to means to results.

0 3 Object

3a) Focus
Search and focus concentrate on the item at hand, its identity and property.
It is stripped as far as possible from prior assumptions, systematic knowledge and context.
It is a basic fact, a single unit of an appearance with a single property.
It is the smallest unit of observation, having been handled by eg fixture, labeling and modulation.
3a1) It has identity by
a1,1) Pointedness through focus.
a1,2) Limits in form, space and time.
a1,3) Identifiers like discreteness, distinctiveness, individuality, mappability and denotability.
a1,4) Isolation through cutout from its neighbors, environment and background.
3a2) It has a property by
a2,1) A characteristic status or behavior.
a2,2) A relation in interaction with another object.
a2,3) There is a physical, human, spiritual in-external force as cause, responsible for generation, preservation, alteration and transmission of a property with action and reaction.
a2,4) Meaning in a cultural context.
3a3) Composite focus
It is taken repeatedly into focus and scanned for refinement of details and widening of panorama.
a3,1) Shift in place, eg conditions of background and environment.
a3,2) Shift in time, eg behavior under in-external forces.
a3,3) Shift in scale, eg into the micro- and macrocosmic.
a3,4) Shift in range, eg back and forward extrapolation.
a3,5) Shift into macro-structures, eg with conglomerate and mass effects.
3a4) Conglomerate focus
Conglomerate items with several basic items are divided into their parts and focused
a4,1) Each basic item separately.
a4,2) The conglomerate item as a whole.
a4,3) Their interdependencies and -actions.
a4,4) Their synergistic-antagonistic effects.

3b) Observation
Observation takes up raw data from an identified item in focus to sensual perception to mental consciousness, where they are registered and stored in short and long term memory.
It takes the object into focus from all sides with a line of view for every conceivable property to reach across all layers of reality and their dimensions.
It comprised the complete track of foci as a field-span of attention and space-time cutout of reality.
3b1) The unprejudiced focus alternates with existing knowledge, going back and forth between all steps from focus to evaluation in a feedback loop and can be interrupted and redirected at every point.
The item is recognized in space-time with
b1,1) Qualitative semiotic, semantic and contextual meaning.
b1,2) Quantitative magnitude on an eg nominal, ordinal, interval or rational scale.
b1,3) The raw data are collected in a statement, table or picture as answer to the initial question.
3b2) They represent uncovering of new knowledge by a more specific registration of a property.
Registered are eg the old or new, expected or unexpected, normal or exceptional.
Uncovered are the open or hidden, easy or difficult to detect, concrete or illusionary.
Indicators like inconsistencies or atmosphere point at higher order variables or camouflaged intentions.
3b3) Mode of observation can be eg incidental, planned, systematic and hypothesis testing.
3b4) Accuracy of observation can be refined by eg improved performance to supersede previous results.
Technical devices enlarge the range of physical perception to the micro- and macro-cosmos.
They accelerate input, processing and output of large multi-media data volumes.
3b5) Errors are by eg subjective factors, technical accuracy, statistical variation and their multiplication.
3b6) Non-observables are eg past, concealed present, future and inaccessible entities.

3c) Denotation

Denotation attaches to the item in focus a term with a phonetic signal and a written sign.
The atomic item expands into a dynamic, multi-dimensional construction.

3c1) Term construction

c1,1) It is derived by interaction of objective item, mental term, linguistic word and semiotic sign.

c1,2) It is derived out of a necessary attribute of the item to be representative, intelligible, reflective, objective as well as clear, short, precise, specific, ordered, neutral, compatible and not alone negative.

c1,3) It is by semantic being eg constative, representative, regulative or expressive, by semantic function eg explicative, expressive, instrumental, moralistic or evaluative.

c1,4) It carries mostly statements of faith by divine inspiration, of maturity by explication of human-social objects and of reason by explanation of natural objects.

3c2) Objective item

c2,1) It is listed with all its properties in intention (content), extension (cases) and their relations.

c2,2) It is typified according to its primary real semantic content.

c2,3) It is classified under the next higher genus and by art differences to become a part in an open, heterogenous taxonomic systems of all objects. It allows one like all treatment from search to application with eg standardization, methodization and economization. Major classes are

c2,3,1) Spiritual objects with the categories non-violence and address of major issues.

c2,3,2) Human objects with the categories content and appearance; universals of place and time; presentation in public, medium, situation, context and environment; rooms of freedom, capabilities and boundaries; non-knowledge, uncertainties, risks and dangers; inhibiting factors.

c2,3,3) Natural objects with the categories quantity, quality, relation and modality.

3c3) Word

c3,1) It is part of a competent language, an open, heterogenous system, being recognized, formal, intersubjective, neutral, stable, functional with vocabulary, phraseology, pronunciation and grammar.
Its vocabulary is organic, multilevel in phantasy, comprehension, knowledge, realities and dimensions.

c3,2) Scientific terminology expands common usage by eg field specific definitions, theoretical concepts, function assignments and unobservable entities to become precise and non-contradictory.

3c4) Sign

c4,1) It is part of a reservoir of signs like icons, indices and symbols, an open, heterogenous system, corresponding to a competent language to carry information about the item from A to B.

c4,2) Encoded signs can be technically processed to communicate in any medium over any distance.

3c5) Compatibility

Object, term, word and sign correspond 1:1 in content, representation, construction, explication, logical space, grammar and sign architecture.

3d) Description

A complete description of an object constitutes its intellectual data base of present knowledge.
It states the author's position with intent and issue specific definition of truth.

3d1) Text

d1,1) It is out of phonemes, morphemes, lexemes, syntax, pragmatics, semantics and linguistics.

d1,2) It forms eg atomic and conglomerate terms, sentences, listings, definitions, axioms, analyses, conclusions, laws, prognoses, instructions, themes, theories, narrations and fiction.

d1,3) Paralinguistic are eg sound, volume, intonation, pitch, range, rate and body language.

3d2) Necessary content

d2,1) Natural, human and spiritual forces with causal chains and effects.

d2,2) Phenomenological properties with characteristics and relations.

d2,3) Functions, states, structures, processes, paths, mechanisms, events and effects.

d2,4) Classification and categorization.

d2,5) Reality, being eg spiritual, natural, human, mental, psychical, emotional, pragmatic or fantastic.

d2,6) Environments, eg connotations, situation, communication, theme discussion, tradition, praxis, context, philosophy of research, mental horizon, world view, reception and political-social history.

d2,7) Logical and mathematical spaces can be defined by eg set of items, subsets, axioms of existence, characteristics, relations with eg functions, combination rules, hierarchies, extensions, range of validity, constants, conditions, where all preserve identities, consistency and non-contradiction.

3d3) Descriptions as tools of language are sensitive to paradigms and by standards of truth a distortion of a single content feature against the asserted intent becomes deceptive.

3e) Deliberation

Deliberation, a disposition center for feedback loops between all steps of cognition, picks up description data to process them in psychic-mental true treatment, applying subjective, conscious, organized mental processing products to ascertain the best path of action.

Mental processing products after description generate a conception and intention, memorization, mental operations, reflection, combination of conception-intention and a design of expression.

3e1) Tasks are

e1,1) Checking of results from observation and description for validity.

e1,2) Initiation of interpretation and evaluation.

e1,3) Realization of a project via planning, decision and implementation.

e1,4) Education of professional fields and the public.

3e2) Mode can be eg incidental, planned, systematic and hypothesis testing.

Developmental goals are achieved by long term, systematic, institutionalized application.

3e3) Esprit demanded are for

e3,1) Imagination to envision possible search results, significance, applications and impacts.

e3,2) Rationality with object true treatment along professional, object related standards.

e3,3) Standards of truth to live up to ethical requirements.

3f) Interpretation

It draws heavily on antique and medieval scholarship and present day natural sciences.

3f1) Exegesis

Exegesis lets His Word being grasped by His Grace in faith and sound theology.

At the center stand word and sense in direct language to further adequate reception and response.

f1,1) Main intent is empirical, aesthetical and spiritual reconstruction, interpretation and evaluation of testimonials and the scriptures (depositum fidei) by a diversity of methods.

f1,2) Text reconstruction aims at recovery of the original or furthest back wording, language, document, illustration, commentary, distribution, version, translation and media praxis.

f1,3) Situational analysis describes the immediate psychological, communicational, communal, social, economic, scientific, political, zeitgeist, ritual, theological conditions and context of place and time.

f1,4) Text analysis describes form, style, content, semantics, grammar, syntax, diction, structures, relations, models, references, creations, paradigmatic and syntagmatic lines, semiotics, pragmatics, mediums, performances, artistic renderings, position, logic, function, usages, variations, statistics, coherence, elasticity, centricity, stability, uniqueness, aesthetics, entropy, context and inter-context.

f1,5) Text history describes its conditions, traditions, editions, paths, interpretations and influences.

f1,6) Text comparison describes its traditional, cultural and inter-confessional contexts.

f1,7) Text Interpretation

- It highlights the intent of the author with his perspective, biography and real life conditions.
- Teleologically it describes theme, sense, purpose and spirit of the word.
- Tropologically it extracts life experiences and moral guidelines for praxis.
- Typologically it connects events of the Old Testament with those of Christ.
- Eschatologically it focuses on future events up to the last judgment.
- Femininely it eliminates prejudices because of origin, gender, age, race and culture.
- Considered deductively and inductively, restrictively and extensively are place, time, type, commonality, generality, similarity, analogy, probability, possibility, functionality and complexity.

f1,8) Assisting are clarifications, outline of limits, adaptions to languages and cultures.

f1,9) Assisting are archeological findings and scientific methods of all fields.

f1,10) Evaluation is by standards of accuracy, plausibility, credibility, sincerity and significance for eg errors, gaps, add-ons, changes, scope of interpretation, corruption, instrumentalization and deception.

f1,11) Development of teaching

f1,11,1) In study by opening up of new sources, advances in scientific-technological knowledge, raising of standards, public discussions and new grasping of issues.

f1,11,2) In inter-confessional dialogs by rectification, compensation, reconciliation, hospitality, tolerance, integrative praxis, respect of human rights and recognition of interdependencies to arrive at incorporating statements of faith with superseding, generalizing und unifying principles.

3f2) Hermeneutics of secular verbal, written and multi-media communications
Hermeneutics let secular expressions become understandable in maturity.
An objective, semantic context is visualized in a subjective mind for mental processing and response.

f2,1) Main intent is empirical, aesthetical and human reconstruction, interpretation and evaluation of the selected material from author's intention to reception history by a diversity of methods.

f2,2) Text, context and situation reconstruction and analysis are comparable to those of exegesis.

f2,3) Text interpretation

- It highlights the intent of the author with his perspective, self-understanding and background.
- Truth of documented facts, fictional characterizations, similes and allusions.
- Rules of spelling, punctuation, hyphenation, grammar and diction.
- Form like documentation or fiction as roman, short story, drama and poetry.
- Style of presentation like description, narration, persuasion and accusation.
- Elements like protagonist, antagonist, narrator, plot, conflict, theme and mood.
- Figurative language like metaphor, hyperbole, personification, allegory and irony.
- Structures like repetition, alteration, contrast, frame, isocolon, hyperbation and episterophe.
- Levels of meaning like denotation, symbol, allegory and metalepsis.
- Morals like quintessence and behavioral advice.
- Emancipative drives like investigative journalism and social activism.
- Existentials as basic requirements and conditions of human life.
- Situations with options, hopes and hypothetical events.
- Prognostics like forecasts and warnings.
- Criticism of forces, institutions, events, environments and ways of thought.

f2,4) Art epochs designate the abstract, symbolical, common cultural characteristics of an artist, group of artists, techniques, tendencies, schools, regions and social contexts to systematize history of art.

f2,5) Reception history traces the retrospective interpretations of cultural events in the communicative chains of an author's publications, audiences' analyses, discussions and responses from all backgrounds over time. The author's intentions can be accepted, negotiated, re-interpreted and opposed. They can influence the work of subsequent authors and the propagation of thoughts in eg awareness of issues, self-understanding, life style, zeitgeist, standards of man-society and history of mind.

3f3) Natural philosophy about phenomena of nature
Natural philosophy lets phenomena of nature become explainable in reason.

f3,1) Main intent in exploration of the cosmos is empirical laboratory reconstruction, interpretation and evaluation of its natural phenomena from matter to plant, animal and human life by scientific methods.

f3,2) It shows natural-human causes-effects in all aspects with possible applications and misuses. Formal nomological deduction requires empirical content, law likeness, derivability and truth.

f3,3) Scientific methods with hypothesis, analysis, synthesis and controlled experimental observation and deliberation gain qualitative-quantitative knowledge about forces, characteristics and relations.

f3,4) Forces are responsible for past, present and future properties of objects

f3,4,1) Physical forces are the strong, weak, electro-dynamic, gravitational ones in space-time.

f3,4,2) Bio-chemical forces lead over evolutionary times to growth with differentiation of functions.

f3,4,3) Human-social forces show themselves in their expressions by communication and action.

f3,5) Forces extend along a chain of causality

f3,5,1) Cause is a sensory confirmed deterministic or probabilistic regularity.

f3,5,2) Mechanism proceeds in a directed, transient path sequence of pre- to post-ceding events.

f3,5,3) Effect is the final observed result, which can lead in a wider context to further consequences.

f3,6) Laws of nature relate a force and property qualitatively-quantitatively to its dependent variables.

f3,7) Universal validity of laws is assumed by enumerative-inductive reasoning until falsified.

f3,8) Conditions delineate co-determining factors and limits of validity.

f3,9) Predictions of forces' and objects' behavior are possible under comparative conditions.

f3,10) System of natural phenomena is a two or more forces dynamically interacting, initial closed or open structured state, going via several mechanisms towards a final steady state or labile equilibrium.

f3,11) The logical structure of the sciences comprises a compendium of comparative laws of nature.

f3,12) Explanations can be refined by more explicative interpretation and supersede previous results.

3g) Evaluation
Human expressions and man made objects in freedom of choice with positive or negative consequences are evaluated by standardized values to generate objective, predictable and common benefits.
Evaluation is the most relevant step of cognition in the feedback loops from focus to applications.
3g1) Higher values guard basic existentials of life. Lower order ones become increasingly item specific.
3g2) General responsibility rests with the sovereign, the people, on a global, timeless scale.
3g3) Responsibilities are shared according to contributing parts by eg the researcher, developer, political-social sponsor, producer, sales person, end user and overall affected general public.
3g4) Re-evaluation is self-critically correcting disregarded and changed object requirements.

3h) Documentation
Documentation records the results of all steps of cognition on a physical-chemical-biological substrate for storage and communication as eg artefact, text, sound track, drawing, picture, video, multi-media, performance, model, simulation and scenario.
3h1) Stated with it are author, place, time, conviction, intent, definition of truth, approach, perspective, devices, utilities, methods, range of error, references, conditions, context, comments and provisions.
3h2) Storage in public-private libraries preserves records to be durably safe, retrievable and accessible.
3h3) Exponentially growing knowledge is kept in data banks of the specialized professional fields.
3h4) A selection of information is archived as relevant records over historic time spans.

3i) Propositional support
Copies of the documentation are handed to peers in the professional field for review.
Evaluation ranges from support to advice, comment, reflection, concern, objection. criticism to rejection.
Confirmation of scientific facts ranges from eg probable, plausible, likely, poor to flawed by criteria of
3i1) Stringency of standards.
3i2) Validity of assumptions.
3i3) Constructability in faith, understanding or explanation.
3i4) Reproducibility by replicative tests.
3i5) Objectivity by 3rd party confirmation.
3i6) Traceability along a line of argumentation.
3i7) Predictability of behavior by eg divine revelation, human intentions and natural forces.
3i8) Non-falsification by a contradicting fact or competing theory.
3i9) Number of confirmations.
3i10) Quality of references.
3i11) Coherence of a system of knowledge by eg analogy, amendment, extrapolation and unification.
3i12) Form, supporting eg content, context and workmanship.
3i13) Controversy highlights eg divergent interests of cognition.

3j) Publication
Publication makes documented and confirmed information available to the general public.
3j1) Publisher
- j1,1) A publisher reviews, edits, stores, reproduces, announces, distributes and markets the material.
- j1,2) He can be eg author, performer, publishing house, speaker of an organization and lone voice.
- j1,3) Medium can be eg flyer, bill board, web posting, daily press, magazine, video, scientific journal, forum discussion, play, concert, underground channel, zeitgeist, rumor and mood.
- j1,4) Recipient can be eg investigator, acute observer, chance witness, local audience, privileged circle, affected people, interested parties and the entire population.

3j2) Knowledge
- j2,1) The information is constituted as a fact.
- j2,2) It is the basis of knowledge, an image of reality and capability.
- j2,3) Managed, surveyable knowledge represents the present day mental horizon.
- j2,4) It is utilized in theoretical-practical applications in scientific, commercial, social and political fields.

3k) Public discussion
Pool of issues comprises all phenomena demanding general recognition.
Pool of voices comprises all contributions from the whole spectrum of the population.
All issues are public because of the universals of dignity, truth, knowledge, equality and codetermination.
3k1) Intentions range from investigative effort to information exchange to image fascism.
3k2) Main intent is to embed enlightenment into political-social participation.
Scaled up intent is to arrive at a durable society with long term problem-conflict solving.
3k3) Means, as base pattern, are those of enlightenment: questioning, cognition, description, interpretation, evaluation, publication, design of expression, realization and legal regulation.
Inhibiting factors are overcome by political will, language, presentation, regulation and supervision.
3k4) Decision is the central, radial point, where discussions are bundled to a specific issue, contributions for resources are searched for and distributed and the event is recorded in the chronicles.

3l) Problem solving
Problem solving centers on existentials, ranging from daily needs to creeping erosions to catastrophic incisions, impairing man's physical-mental-social and natural environment's well being.
3l1) Main intent is to alleviate and to protect against a threatening physical damage.
Scaled up intent is man's self-preservation with sufficient resources in the long term future.
3l2) A workable solution, an adequate mental design of expression to be realized by administrative and technical means, is gained out of research and public discussion with
- l2,1) Human resources from the spectrum of the population with professional experts.
- l2,2) Material resources as required with state of the art materials and equipment.

3m) Conflict solving
Conflict solving centers on social strife out of opposing interests of individuals and social forces with civil discontent, unrest, lawlessness and violence against human health, material goods and the environment.
3m1) Main intent is to defuse and protect against acute threats of physical injury and damage.
Scaled up intent is observation of internationally, legally protected human and nature's rights as an aspirational red thread for long term human prospects.
3m2) A workable, ratifiable solution is gained out of public discussion and negotiations in private-public-international mediation, arbitration, litigation and intervention towards a mutually advantageous rapprochement by eg clarification, de-escalation, incentives, compensation, compromise, cooperation, compensation, reconciliation, levelling of inequalities and as a last resort by tribunal and intervention with
- m2,1) Analysis of the social-political constellation.
- m2,2) Legal resources of national constitutions with their bodies of law and international conventions.
- m2,3) Institutional resources of national and international court systems.
- m2,4) Diplomatic resources of inspectors, neutral intermediaries, mediators and arbitrators.
- m2,5) Military resources of local authorities and an international intervention force.

3n) Development
Development of man made objects out of natural and human resources is in continuation of expression a universal human activity. Molding an object, it aims at an advancement in realization of human potential.
It is initiated by spiritual, mental, psychological, emotional, biological and bio-mechanical forces in combinations. Only limited by imagination, it reaches across all layers of reality.
3n1) Goal orientation centers on the desired object for in depth attention.
3n2) Means are scientific, artistic and contemplative research, soft and technical skills, experience, knowledge, labor, natural resources and financing.
3n3) Creative development generates improved existing, innovative, speculative and visionary objects, which did not exist before in construction of future living environments.
3n4) Qualitative development achieves a qualitative transformation of a human drive into a mental-human-natural product with merit by applying standards of sound theology, reason, maturity and ethics.
3n5) Long term, large scale, institutionalized, systematic research, development and their applications refine, add to, correct and spread present knowledge, generate a multitude of differentiated, specialized professional fields and niches, expand comprehension, freedoms, capabilities, radius of action with frontiers of the thinkable, calculable, do- and usable and with it human boundaries into the micro- and macroscopic over ages.

0 4 Relation

4a) Relation
Cognition starts out along a relation from the object to the investigator by observation.
It proceeds from the investigator to the public by communication in repetitive steps.
The raw data are carried by energy-matter impulses out of a cause - effect relation to the human senses.
The forces can be eg optical-electro-magnetic, acoustic-mechanical and bio-chemical.

4b) Information
4b1) Raw data are signs on a carrier.
4b2) They become information by a structure with coding, syntax, semantic and pragmatic.
4b3) They require human dignity, truth, verifiability and actuality.
4b4) They require a competent language, an open, heterogenous system, being recognized, formal, intersubjective, neutral, stable, functional with vocabulary, phraseology, pronunciation and grammar.
Language stands at the center of human praxis with text and picture as means of conception, interchange, spread of knowledge, socialization and discussion of issues.
4b5) A unit of information conveys a single fixed yes/no statement as a measurable quality and quantity.
It represents a specific property of an object of any class.
It can be processed for eg en- and decoding, storage, duplication, distribution, search and review.
4b6) A message comprises a series of information units to convey a meaning within a context.
4b7) Its scaled up function is the increase of knowledge.

4c) Transmission
4c1) Data as sensory signal flow from source to encoder, emitter, channel, receiver, decoder to recipient.
4c2) Encoding ranges from artefact to language, text, picture to mechanical-bio-chemical signal.
4c3) Forces can be eg gravitational, mechanical, optical, electro-magnetic, chemical and bio-chemical.
4c4) Channels are eg the environmental medium, tube, cable and mechanical carrier.
4c5) Modi are directed or non-directed conveyance, conduction, convection and radiation.
4c6) Losses can be by friction, absorption, reflection, dispersion, dissipation, leakage and interference.
4c7) Performance measures are eg universality, practicality, flexibility, reliability and obstacle safety.

4d) Medium
Medium of a connecting relation is a physical object, natural or a man made infra structure, transmitting from a sender data, energy or matter over a distance to a receiver.
3d1) Appearance can be
- d1,1) Vacuum or open-enclosed, uniform-composite solid, liquid, gas, plasma for signal transmission.
- d1,2) A bound, stationary device like a conveying belt, cable, signal emitter or gun.
- d1,3) An independently moving carrier like an animal, van, train, plane or rocket.

3d2) Forces of transmission, utilized by humans, animals and technical devices are eg bio-mechanical, gravitational, mechanical, electro-magnetic, optical, chemical, bio-chemical, biological and genetic.
3d3) Transmission is by directed or non-directed conveyance, conduction, convection and radiation.
3d4) Data as sensory signal flow from source to encoder, emitter, channel, receiver, decoder to recipient.
Encoding ranges from plain-encrypted artefact to spoken word to written text to technological signal.
3d5) Surroundings of a carrier can be vacuum, a material in any state and a force of any kind with specific conditions of eg light, wind, current, temperature, pressure, shear, height difference and barrier.
3d6) Losses can be by eg friction, absorption, reflection, dispersion, dissipation and leakage.
3d7) Evaluated is a medium by professional standards of performance, efficiency, reliability and costs.

0 5 Subject

5a) Onto- and phylogenetic development
Anatomical, physiological, psychological, mental capacities of individual organisms and populations have developed over geological time spans by evolutionary forces of mutation, adaptation, selection, growth and differentiation of specific functions within and between populations and environmental conditions.
5a1) The brain, central, enterally-peripherally extended nervous system, an organic, multi-dimensional, variable organ, empowers all mental functions. Its network of $\approx 10^{10}$ neurons generates as neurological codes physical, psychological, intellectual and spiritual objects on the level of conscious perception, re-collection, conception, intention, operation and application.
5a2) Consciousness is neuronal bio-chemo--electro-magnetic sensory awareness of a short term focused item and a long term present background screen, serving as a workbench for mental processing.
5a3) Homo cognitus has formed out anthropological behavior patterns of eg
- a3,1) Flight, adaptation and conquering of challenges.
- a3,2) Search, exploration and discovery of uncharted areas.
- a3,3) Recognition of needs, opportunities, incentives and means for innovations.
- a3,4) Self-knowledge, -improvement, -realization and -determination.
- a3,5) Sharing of experience, traditions, know-how, knowledge and ideas.

5b) Emotions
Emotions as atmosphere of being constitute a distinct un- and conscious psychic activity.
They accompany, anticipating to trailing, synerg- to antagonistically, human motivations and activities.
They are controllable, trainable, manipulable and vary in intensity and perceptivity.
They generate physical feelings, psychic passions and spiritual compassions.
5b1) Physical feelings arise with basic individual and collective needs as basic emotions.
5b2) Passions arise with individual and collective psychic, social and mental needs.
5b3) Compassions arise with individual and collective spiritual drives towards self-emancipation and overall comprehension with a responsibility to realize by means of enlightenment a common benefit.
5b4) They introduce positive and negative impulses to all factors of cognition like attention-deflection, attraction-rejection, hypersensitivity-stupor and exaggeration-omission.

5c) Way of life
Repetitive activities, the largest part of study, work and social practices, are a locomotive engine to move large loads in realization of private and collective endeavors.
5c1) They stream out of directed, corrected and redirected actions into a course of habitual behavior.
5c2) They are tied into a multitude of politically embedded, autopoiesic macro frameworks of local to global, open to hidden, soft to forcing, minor to dominant relations.
5c3) They promote positive and negative understanding and praxis in all factors of cognition.
5c4) Effects can be diligence-sloth, impartiality-prejudice and altruism-egocentricity.

5d) The senses
A sense is a physiological capacity of an organ to record with receptor cells a specific stimulus.
Body internal receptors record movement, balance, pressure, temperature and pain.
Body external stimulation through seeing, hearing, smelling, tasting or touching is the first, immediate, non-alternate source of cognition of objects for reflexive or mediated response.
5d1) Stimulations are filtered for items of interest, others are left below a threshold of consciousness.
5d2) Attention span can be short to long term, low to highly selective and automatic by training.
5d3) The stimulation is neurologically encoded into a dynamic bio-electro-chemical action potential.
5d4) It is passed on by the visual, auditory, olfactory, gustatory or somatosensory-kinesthetic cortex to the brain lobes for acute experienced sensual-mental perception.
5d5) It is transformed into a present, conscious, constructed, representative image in mental conception.
5d6) Interpreted into a conception are often eg simplicity, pattern, features, organization and coherence.
5d7) Codetermining impulses come from eg questions, motivation, experience, context and environment.
5d8) Performance measures are eg receptive field, sensitivity, resolution, reaction time and reliability.
5d9) Range of observation is limited to the meso-cosmos, the every-day living environment. Instrumental detectors enlarge the range to the equally present micro- and macro-cosmos.

5e) Mental capabilities
The mind is the decision making organ of physical, psychic, mental and spiritual activities.
5e1) Mental capability and productivity change over a life cycle, in environments, with re- and acquired training, experience, knowledge and ways of thought.
e1,1) Perception comprises all activities by internal and external senses.
e1,2) Inner processing products for subject true treatment are cognition, intention, conception, memory, mental operations, reflection, combined intention-conception and a design of expression.
e1,3) Outer processing products for object true treatment are cognition of the object, approach by its class and realization by communication and action towards the desired result.
5e2) Mental activities generate new capabilities beyond animalistic instincts. Innate anthropological behavior patterns are replaced by emancipation and conviction based behavior patterns.
They enable universal treatment of objects of any class with their properties, dimensions, categories by questioning and evaluation, cognition and knowledge, reasoning and speculation, realization and application.

5f) Experience
Experience registers subjectively all personal and surrounding activities of life.
5f1) Stimulations are filtered for items of interest, others are left below a threshold of consciousness.
5f2) They are acquired in the modes of eg active or passive, re- or previewing, one time or tracking, short or long term, accidental or preplanned, autodidactic or institutionalized, sensual or instrumental.
5f3) They are intensified by eg own questions, searches, deliberations, discussions, hands on experiences, failures, restarts and successes to become reflected and reliable.
5f4) They are collected in memory as sensual-empirical data with eg semiotic-semantic values, causes, mechanisms, effects, environments, singularities, generalities and expectations.
5f5) They are expanded by reported experiences of other parties and by compiled objective knowledge.
5f6) Their are collated with knowledge and visions about human objects towards maturity to let them become reconstructable and understandable.
5f7) They are collated with knowledge and visions about natural objects towards reason to let them become reconstructable and explainable.
5f8) They give direction to cognition by intuition, hunch, suspicion, educated guess and analogy.

5g) Self-understanding
Man is centered in his convictions. Life is carried by esprit.
Telos of mind changes anthropological behavior patterns into emancipation based behavior patterns.
It springs out of faith with a set of religious statements or out of a human concept about life to outline intentions and conceptions in relation to man, society, nature and the infinite. Sub-concepts are
5g1) Preconditions are individual and collective autonomy of body and mind with freedoms of inner and outer movement and cognition to be able to see, think and act.
5g2) Personal and collective goals.
5g3) Emancipation with self-preservation, -interpretation, -determination and -realization.
5g4) Responsibilities for the betterment of man and environment with values, tasks and means of enlightenment, employing language, public discussions, legal regulations and supervision.
5g5) Increases in comprehension with
g5,1) Expanded knowledge about man, society, nature and God.
g5,2) Expanded limits of the thinkable, calculable, do- and usable.
g5,3) Expanded boundaries of man versus man made and natural living environments.
g5,4) Long term emancipation in cosmic dimensions.
5g6) Unchecked self-serving, the common good disregarding social forces defy cognition.

5h) Historical factors
History compiles investigative tracing, recording and evaluation of time bound activities in all fields of life. Main intent is to generate a representative cutout of present political-social affairs and their driving forces as a living heritage with achievements and failures, seen over millennia against man, nature and God.
History of cognition records ethos, alliances, investments, acquisition of knowledge, means, public discussions, applications, events and impacts in the differentiating professional fields.
5h1) Applied, industrial, medium term research is promoted out of political-military-scientific-commercial-social interests. For practical, goal defined molding of man made objects, it strives for knowledge, skills, technologies, engineering, organizational structures, designs, patented applications and profit.
5h2) Basic, scientific, long term research is promoted out of discussions about fundamental principles of phenomena. For solving theoretical questions, their description, understanding and explanation, it strives for knowledge, skills, generalities, predictability, enhanced capabilities and returns in the future.
The unity of science deduces from fundamental quantum physics the special sciences of chemistry, biochemistry, genetics, etc.… in a systematic, consistent tree structure.
5h3) R&D utilize basic research results translationally to realize newly made possible innovative, competitive, marketable products and services.

5i) Schools of thought
Schools of thought have bundled cognitive efforts since antique scholarship. Their various epistemic approaches to knowledge and life have unfolded a variety of aspects, eg
5i1) Ontology describes deductively being qua being its realities, meanings, categories and modes.
5i2) Idealism claims reality of objects to be mentally constructed and not mind independent.
5i3) A priori reasons claim not to come out of experience, but out of immediate, necessary insight.
5i4) Realism claims reality of objects to be scientifically approximable and independent of thought.
5i5) Empiricism deduces all knowledge from self-verifiable sense-experience.
5i6) Positivism deduces all information from sensory experience, logical and mathematical treatment.
5i7) Materialism deduces all natural and mental phenomena from matter/energy and its interactions.
5i8) Pragmatism demands practical, applicable functionality in addition to theoretical accuracy.
5i9) Existentialism describes the primarily important in- and outward existence of a free, self-responsible feeling, thinking and acting human individual in an inauthentic environment.
5i10) Historicism embeds scientific theories into relative, dynamic contexts of place, time and culture.
5i11) Phenomenology reduces deceptions of observable appearances to self-reflective descriptions.
5i12) Analytical philosophy employs non-speculative, critical, logical, linguistic analyses.
5i13) Critical theory investigates mechanisms of power, misusing eg reason, science and technology.
5i14) Post-structuralism complements traditional theories with a plurality of heterogeneous perspectives.
5i15) Spirituality recognizes the transcendental aspects of objects of all classes.

5j) Present day trends
Interests, sources and applications of cognition have expanded into a multifarious spectrum as all political-social endeavors require R&D investments for improved performance, modernization and innovation.
5j1) Professional fields are expanding, differentiating, specializing. Growth of knowledge is exponential.
5j2) The scientific community interacts with R&D, teaching, applications, management and regulation.
5j3) The sciences have generated a functionally intertwining technological civilization.
5j4) Information has become a production factor aside of capital, natural resources and labor.
5j5) Globalization opens up global markets by rapid transport of people, goods, money and data.
5j6) Economic players' exploit human and natural resources often with irreparable damages.
5j7) Political-military-economic-social players enforce their hegemonic policies in an environment of global conflicts with image fascism throughout all channels of public opinion.

5k) Institutional factors
Private and public institutions can promote, channel and inhibit contemplative, aesthetic and scientific research in all fields at any stage according to their philosophy of research and desired objectives.
5k1) Spectrum of institutional activities ranges from a single project, professional field, application, natural resource, human resource, structure, process, population group to the environment.
5k2) Means are eg political, legal, financial, commercial, medial, technical and by human resources.
5k3) Praxis of research has advanced into educationally trained, systematic, institutionalized, generations spanning efforts globally in all fields.

5l) Codetermining factors
The spiritual-political-social character of a society is codetermined by its environments and boundaries.
5l1) Environments are long term ex- and internal variables of life. They comprise eg the natural environment, political system, social conditions, human and material infra structure, media, mental, mentality states, social - individual weights, mass effects and their interactions.
Changes are alterations in essential areas of life and their environments. They are caused by eg changing motivations, opportunities, improvements, deteriorations and obstacles.
5l2) Boundaries are man's limits of spiritual, mental and physiological capabilities in its environmental conditions, which can be enlarged by long tern systematic, institutionalized research and development.
Class boundaries are sound theology towards God, reason towards nature, ethics towards society and maturity towards man himself. They cannot be transgressed severely without recoil at oneself.

5m) Ethics
Ethics solve historic cases of gross criminal corruption with disastrous consequence.
5m1) Its intent is to preserve ethical freedom, that not an inhibiting factor runs to its self-destructive end.
5m2) Scaled up intent is moral utopia: spiritual, human and natural awareness, where public comprehension is able to discern, describe, evaluate and act for the long term survival of man and society.
5m3) It is trained on issues with universal principals of dignity, life and truth.
5m4) It educates the population towards a healthy conscience about true and false, right and wrong.
5m5) It educates towards an overall comprehension about God, nature, man and society, an individual-collective responsibility, enlightenment and beneficial results.

5n) Inhibiting factors
Cognition inhibiting factors introduce man made barriers by causes of error and intent.
5n1) Errors are deficiencies in intellect, affecting a point and chain of argumentation.
5n2) Intentional barriers are defects in drives, mentality, intellectuality and spirituality, originating out of criminal inclinations, hate of man and archaic notions of prestige, power, possessions and pleasure.
5n3) Targets of gain are mostly self-image, language, frame works and tangible objects.
5n4) Targets of loss are mostly the natural environment, another person's social-professional surroundings, his property and he himself.
5n5) Targets of elimination are first political-social opponents and watch dog organizations.
5n6) Means are acquiescence, subversion, corruption, deception and violence in combinations.
n6,1) Deception manipulates cognition, intentions, conceptions, communications and actions for
n6,1,1) Motivation control by eg stirring up of lower fears and desires leads to eg brutality.
n6,1,2) Justification control by eg propaganda for a political system leads to eg dogmatism.
n6,1,3) Public opinion control by eg manipulation of content, context, style and image by eg appeasement, diffusion, deflection, distortion, misinformation, omission, elimination, perversion, ridicule, entertainment, glorification, irrationality leads large scale to social reality control.
n6,2) Violence damages a spiritual, natural, man made object or human being by degrading abuse, attack by a military tool designed to do damage and misuse by a civilian tool designed to amend.
n6,2,1) A man made object is damaged by eg tempering, misapplication and destruction.
n6,2,2) A political-social-professional framework is damaged by eg harassment, denial of ownership, disenfranchisement, expulsion, exploitation, subjugation, strangulation and enslavement.
n6,2,3) Degrading abuses are eg insult, defamation and surveillance.
n6,2,4) Impairment can be eg physical injury, disease, change in level of a genetic-physiological capacity, altered growth and differentiation of a physiological trait.
n6,2,5) Torture and murder.
5n7) Degrees can escalate in place, time, organization, technology and severity.
5n8) Archaic notions enforce in combination with violence
n8,1) Prestige in image fascism means of deception.
n8,2) Power in system fascism a political program.
n8,3) Possessions in order fascism a social program.
n8,4) Pleasure in supreme egocentricity hedonism.
n8,5) Systematic, population wide fascist formations lead to in- and external hegemonic policies.

0 6 Summary

Access to all objects is by cognition.
It is the necessary starting point of successful human endeavors.
It adopts a position and perspective to initiate the process of questioning, seeing, thinking and acting to be able to treat human, natural and spiritual objects according to their true properties and dimensions.
As first bottleneck of action, it stands up front against errors, irrationalities and interferences.
One faulty step derails the process. Its consequences can be estimated, where the positive weight of a factor is determined by hypothetical simulation and the negative weight by corrected rerun.

6a) Achievements
6a1) Antique scholarship to modern research have taken a scientific approach to cognition.
Huge advances have been made over the last three centuries in the natural sciences, logic, mathematics and technologies with expansion of the radius of action and generation of power and wealth.
6a2) Global players, power elites and broad social efforts have institutionally, systematically, competitively, generations spanning promoted many factors of cognition with research and development.
Today, there is not a political-military-economic-social endeavor that is not based on research efforts.

6b) Failures
6b1) Man, the primary factor of cognition, has been largely left in Morpheus arms.
- b1,1) He does not see his position against nature and God. He cannot survive in cosmic dimensions.
- b1,2) He does not see his intentions, a brutal creature, applying any means for his advancement.
- b1,3) He cannot effectively handle conflict solving between institutions and alliances of power.
- b1,4) He is devoid of self-understanding and ethics across the board.

6b2) Global players and power elites have realize their ambitions of social programming institutionally, systematically, concentration camp like, mass effectively with B-C-R micro weapons of mass destruction and escalated them into a global, clandestine dirty war. They curtailed factors of cognition to cut out of public awareness their information control by interception, profiling, manipulation and elimination.
Facades pretend responsible integration of scientific-technological advancements into society, an environmental paradigm, - however, in image fascism they lie about life and creation, procreation and causes of procreation, death and causes of death, constitutionality and human rights, faith, reason and maturity.

6c) Planetary catastrophes
6c1) Continuing are massive hunger, epidemics, inequities of wealth, overpopulation, environmental destruction, exploitation, human rights violations, subjugation, open and hidden combat.
6c2) Threatened is a human hand directed 'evolution' towards a cyborg and a chimera with augmented capabilities by 'programmable' electro-magnetic-mechanical and bio-chemical-genetic means.
6c3) After colonialism, two world wars and genocide, today with new mass murder technologies, the sum of multiple, escalating gross corruptions in excess of boundaries will lead inevitably to collapse of political-social systems, planetary catastrophes and self-extinction of mankind.