

UMEÅ UNIVERSITY

Department of Informatics

Prof. em. Kristo Ivanov

<<http://www8.informatik.umu.se/~kivanov>>

Kristo Ivanov

Version 220408-1535

**Customized complementary word & issue index for  
C. West Churchman "[The Design of Inquiring Systems: Basic  
Concepts of Systems and Organization](#)".  
(New York: Basic Books, 1971)**

<http://www8.informatik.umu.se/~kivanov/chuindex.pdf>

<http://www8.informatik.umu.se/~kivanov/chuindex.html>

<https://ia600105.us.archive.org/31/items/chuindex/chuindex.html>

This word & issue or subject index is customized to the purpose of fostering wider and deeper applications of a social dialectical systems approach. It is intended to be used in conjunction with the wordindex published in the book. Issue-indexing implies that even if the particular word does not appear on the referenced page, either a synonym, an associated, or analogue issue does. Additional explanatory material related to the same philosophical background can be found at the following URL and its links: [http://en.wikipedia.org/wiki/C. West Churchman](http://en.wikipedia.org/wiki/C._West_Churchman).

Parenthesized page numbers, italics, and bold face types in the text below indicate an increasing degree of relevance and importance. Words referenced after the abbreviation "cf.", and whose radicals are not found in the index as is the case for words put within parentheses, point to entries in the book's own index or in Webster's

Third New International Dictionary (unabridged) or in specialized dictionaries of the fields of information science and philosophy of science.

The purpose of presenting this index to a wider audience is to allow for a starting point for deeper and wider inquiries in a research tradition that allows for broad systemic relations between disciplinary areas and key notions as they appear in the index. The claim is that this book contributes to the establishment of a time-stable theoretical conceptual ground in the most general terms of philosophy of science. That is: a "language" which - close to the tradition of philosophical pragmatism - facilitates communication among researchers who work in different schools of thought and areas of application. In particular this initiative aims at facilitating - in one same research organization - that every researcher be able to contribute to the work of colleagues by means of the easier initial understanding afforded by an tentative initial set of shared concepts which may be argumentatively modified or rejected in the further course of a particular inquiry.

This index can also be used for computerized searches of key words by means of the "Find" feature of word processors, and for this purpose it is available on the Web at <http://www8.informatik.umu.se/~kivanov/chuindex.pdf> or (the latest version) at <http://www8.informatik.umu.se/~kivanov/chuindex.html> and <https://ia600105.us.archive.org/31/items/chuindex/chuindex.html>.

Permission to make digital/hard copy of this work for personal or education use is granted provided that it is not done for profit or commercial advantage, and notice is given of the source.

absolute mind, 178; cf. progress, mind

absurdum, demonstration at, 112, 136, cf. axioms

academic freedom, 58

acceptability, vs. knowledge, 233; cf. satisfactoriness, values

accounting, of costs, **166-168**; accounting system, 162; cf. budgeting  
accuracy, 26, 31, 59, 61, **62**, 65, 95-96, 83, 95, 98, 107, 108, 113, *115*, 132, 135, 141, 146, 146, 150, 154-156, **160**, 162, 168, 170, 174-175, 188-191, 193, 195-196, 190, 202, 253, 257; of observation, 154-155; and convergence, 95; as measure of confidence, 111; as minimization of bias, 141; and cost, 62; vs. drama; cf. truth, measurement, precision, reliability, correctness, validity, refinement, quality, validation, proof, confirmation, approximation, Ivanov (project AVH)

Ackoff, R.L., 51, 73?, 155

actability, as knowledge or potential for action, 11; cf. action, activity, actor, implementation, function, drama, politics, ateleology, implementation, speech act

action science, 13-16, (184-185), (199-200), 202-205; cf. implementation

action, and activity, 5-7, 10, **14**, 44-46, 104, **114-115**, 118, **124-125**, 156, 159, 164, 166, 169, **202**, 271; social ethical, **202**; and design, 276; implementation and knowledge, **114**; research, 184; and language, 115, 201-202; and fact or information, 164; as living reality and drama, 171, 173, 175; as life vs. knowledge as grey theory, 204; as realism vs. idealism, **199**; activities and workflow value-added, 166; description of, 156; and change, 271; plan of, 164, 167; as anti teleological good in itself, 249, 254; picture of alternative actions or Weltanschauung, 169; language theory, 102; as process, 204; and action meaning, 158, 163, cf. Abraham Kaplans "action meaning"; cf. implementation, reaction, function-structure-teleology, is-ought, ethics, stimulus-response, interactivity, pragmatism, transaction, process, log and rock on the road, producer-product, romanticism

action language, 102, 115; cf. is-ought, imperative, indicative, illocutory, perlocutory, Austin, (Searle)

action research; cf. action science, implementation

active observer, 159

activity, 7, 166, 249; as good in itself or purposeful activity, 249; description of **43-46**; 166; cf. action, actor, ateleology

actor, system's, 44-49, 71, 200-201, 204; actor network, 73, *171-174*, 182, *185*; functional, 44; social: cf. action; cf. system (and subsystem-component, teleological), client, decision maker, manager, designer, metadesigner, convergence of actor roles; as actor on scene: cf. theater, narrative

actor network, 18, 73, *171-174*, 182, (193-194); cf. chap. (7) *passim*, innovation

actor network theory ANT, cf. actor network

adaptive systems, 63, **65**; as incrementalism, 65-66; and objectivity, 63; cf. evolution, measurement, flexibility, growth, progress

adjustment, of observations (Ptolemaic), 196

advertising, incentives and pricing, 167

aesthetics, 18, 26, 37, 49, (99), 106, 114, 120, 140-141, 143, 155, 158, (170)-171, 195-196, 199-200, 203-205, 216-217, 249, 251, **264**, 266; transcendental (Kant's), 129; as appropriateness, 142; as good in itself, **249**; as artistic creation, 250-251, 266; as joke-play, 235; as taste, 266; as subjectivity, 159; and monism, 73; as formal elegance, 81, 120; as distanced contemplation, 172-174; as styles, 170; as colors and shapes, 139; repertoire of styles, 177; as policy scenario, 171; as the moral quality of the act, 49; as related to clarity and distinctness, 19-21; as creativity, 4; as poetic mood, 153; and beauty, love and truth, 264; art, 267; visual cartoon presentation, 182-184; aesthetic value, (189); aesthetic intuition, 124; and ethics, 216-217; beauty of a system and pragmatism, **120-121**; aesthetic mood, 182; aesthetic sensuous intuition, 145; as (in Leibniz) faith to bridge perception and clarity, 242; as related to obscure non-clear and confuse ideas, 21; dimensions of aesthetical discussion (complexity, obscureness, confusedness), 37; cf. beauty, image, imagination, drama, narrative, taste, appropriateness, style, form, function, creativity

agent, intelligent, 116-118; as in Internet, 117; cf. actor, decision maker, artificial intelligence AI

aggregation, of data, 161

agreement, **85**, 88, 92-94, 97, 101, 104-105, 110, **112**, 114, **118-119**, 126, 154, 157, 161-162, 169, **174**, 187-188, **190-194**, **198-199**: esp. 190, 194, 198-199, 202, 243; control on, 150; in naive empiricism, 191; disagreement for, 193; as objectivity, 150; unconscious Lockean, 194; isomorphic, of inputs, 154; basis of conventional, 112; cf. consensus, consistency, cooperation, convergence, conversation, debate, conflict, pluralism, understanding, democracy, politics, enemy, disagreement, contradiction

AI; cf. artificial intelligence, expert systems, intelligence

algorithm, 88-89, 140; algorithmic thinking, 140

alienation, 159, 161, 163; cf. commitment, participation

ambiguity, as related to redundancy, 161

analogy, 141, 143, 148; rich analogy, **143**; cf. metaphor

analysis, 4, as decomposition, 67; as dichotomy, 159; cf. system-subsystems,

partitioning  
analytic philosophy, 134, 160-161  
analytic sentences, 134  
Anaxagoras, 41, 78  
ancestors, 201; cf. death, past, future generations  
ANT; cf. actor network (theory, Bruno Latour, Michel Callon)  
antagonism, 178; cf. enemy, conflict, cooperation  
anti-planning, 49; cf. anti teleology, anti-thinking  
anti teleology, 49, 216-217, 246-258; cf. anti thinking, Checkland, postmodernism, ateleology, romanticism  
anti thinking, 49, 176, 203; cf. anti teleology, ateleology, aesthetic, antinomy, relativism, postmodernism, romanticism  
antinomy 144, 170, 172; and synthesis, 172; cf. antithesis, vs. contradiction, vs. enemy  
antithesis, 170, 172-177  
aposteriori or a-posteriori, 110; cf. apriori  
apperception, 30, 73-75, 82, 93-94, (141-146, 197-198); cf. representation, Weltanschauung, sweeping-in, attention, will  
applied problem, triviality of, 139-140  
appreciation; cf. value, evaluation, ethics, quality  
appropriateness, 130; of solution, 142; cf. aesthetics, beauty  
approximation, 4, 95; to truth, 144; endless, 4; cf. convergence, accuracy, truth, reality, relativism, chap. (9), *passim*  
apriori or a-priori, 88, 109-111, 115, 124-126, 128-129, 132, 136, 194, chap. 6, *passim*; vs. aposteriori, as hidden assumption, 184; Lockean, 99; empirical, 136; 110; self-examination of, 129; empiricist, 134; minimum, 124; Ptolemaic adjustments, 196; revision of, 194; generalization, 109-110; validation of, 130; cf. presuppositions; minimal, 124, 133-138; for empiricism, 133, 136; cf. aposteriori (a-posteriori)  
Aquinas, St. Thomas, 18  
arbitrary, 105, 117, 186-187, 189; cf. conventional  
arbitrator, in conflict, 174; distinguished from synonyms: conciliator, mediator in negotiation or bargaining  
archetype, 244-245; cf. myth, unconscious, Jung  
archive, 101; cf. database, library

architecture, 7; cf. aesthetics, form, function, structure  
argumentation, 175-176; cf. debate, learning, conversation, agreement, drama, sweeping-in, logic, Hegelian I.S. (chap. 7), Leibnizian fact nets (chap. 2)  
Aristotle, 18, 108, 210-211, 253, 258; Aristotelian imagery, 210-211  
arithmetic, 128-129, 130.131, (134), 192, 197; alternative, 129; and geometry and kinematics, 197; cf. mathematics  
armament; cf. weapon  
arrows-and-boxes, inputs as, 107  
art, 158, 249, 266; and management, social science, and physics, 93; cf. aesthetics, apperception  
artefact, separability or context of, 54; cf. technology, machine, artificial, instrument, production, function, means, tool  
artificial, 4, 17, (131), 150, 156, 158, 161, 257, 259; cf. virtual, artificial intelligence, expert system  
artificial intelligence, 4, 16-17, (21-22), 23, 26, 27-28, 39, 41, 63-64, (71), 74, (78, 87, 90), 91, 93, 99-102, 115-116, 118-119, 124, (129), **131**, 134, 138, **150**, 156-157, **158**, **161**, 195, 197, 214-215/-216, 256-257, **259-260**, 262, 276-277; **chap, 4**, **passim**; cf. expert systems, intelligence; artefact, agent intelligent  
as-if, 46  
aspect 46, 75, (81), 107, 113, (119), 120, 124, 125, 149, **159**, **166**, **169**, 170-171, **174-178**; view, 194, 225; as subjectivism, 151-153, as state of mind, 156-157; and set of representations of object, 159; as descriptor, 192; cf. perspective, viewpoint, attitude, apriori, Weltanschauung, apperception, ateleology, anti teleology, vs. objectivity, subjectivism, relativism, observation, view, vision, image, picture, description, vs. action  
aspiration (ideal), 253  
assumptions 94, 145, 125, 183; analysis of, 171, 178; basic assumption, ontological assumption, 184, 192; and unexplainable events, 136; cf. presuppositions, foreknowledge  
astrology, 244  
astronomy, 135, 196-197; astronomical clock, 135; cf. Newton, Copernican revolution, Ptolemaic theory  
astute empiricist, 150  
ateleology, as basic design, 152-153, 216-217, 227-228, 252-255; cf. anti teleology, teleology

atoms, 209  
attention, 98-99, 102, **112**, 125, 138, 142, **166-168**, 185; cf. relevance, observation, aspect, Weltanschauung, perception, teleology, apperception  
attitude 105, 118, 159, 172, 252; as psychological temperament, 261; as alienated experimenters, 159; so-what, 164; cf. aspect, viewpoint  
attribute, cf. property, 99-107, 202  
auditing, 162, 190  
Austin, John L., cf. action language, illocutory forces  
authoring, cf. learning  
authority and authorization, 99, 123, 144, 149-150, 153, 161-164, 167-168, **196**; delegation of, 163-164, 167; vs. strategic decisions, 196; as perfect observer, 40; of international body, 188; cf. management, legitimation, responsibility, power, hierarchy, ethics, dogma  
authorization, 167 (SAF), 160-162, 164  
automation, 115-116; cf. artificial intelligence  
autonomy, cf. independence, freedom, trilogy, handlingsutrymme (in Swedish), convergence  
autopoiesis, 158, (169)  
axioms, 136; of clock events and kinematical, 135; proof of empirical apriori set of axioms, 135-136; and theorems, 136, 142; cf. absurdum, theorems, hypothesis  
background, visual, 125  
backtrack, backtracking, 100  
bargain, 174; cf. negotiation  
basic data, 137; raw data, 82, 125, 133, 165-166  
Bayesian probability, 114, 153  
beauty, of systems, 120; of love, 264; cf. aesthetics, art  
behavior, 149, 159  
behavior, 148, 151, 154, 156-157, 159  
being: cf. existence, ontology, essence, substance, phenomenology, interpretive  
belief, 24, 114, 171-172, 184; cf. faith, conviction, guarantor, trust, hope, doubt  
benefit, as resource allocation, 156; cf. performance measure, income, profit, ethics  
Berkeley, G., 35, 105, 122, 150; cf. solipsism  
Bessel, 197-198; effect, (156); cf. reaction time  
bias, 141, 176, 183; cf. measurement, error, accuracy  
biology, 116, 192, 197-198; molecular, 197; cf. function, life, organism

bird, black, example, 29-30  
bird, example, 123-124; cf. swans  
bird-egg, causality example, 134  
bit, of information, 161  
black box model, 154, 156; cf. stimulus-response  
blood, as conviction, 178  
body, knowledge through/of, 263; cf. sensation, perception, sensuous, empiricism, aesthetics, hypermedia, implementation, reality, mind, unconscious  
Boolean compounding, 100-101, 106; class logic, 108-109  
boundaries, 222  
brain, 6, 23, 27-28, 39, 41, 118; as information processor, 161; monkey-brain, 23; research, 161; cf. spirit, soul, mind, reason-intellect, artificial intelligence  
brain, human, 161  
brain, monkey or ape, 23  
bricolage and tinkering, 41, 51, 153, 193-194, 196; cf. improvisation, adaptive, evolution, ateleology, anti teleology, intuition, play, shift-and-drift  
brilliance (intelligence), 222  
browsing; cf. library, representation, navigation  
Buddha, 204; cf. God  
Buchanan, B., 79n  
budgeting, 67; and cost accounting, **166-168**; cf. PPB  
bureaucracy, 162  
business, cf. inventory, manufacturing, sales, e-business  
butterfly and storm example, 63  
buzzwords, in management fads, 92  
calibration, 52, 132, 135-136 (A. Danielsson), **152**, 191, 198; as adjustment of readings, 195-196; cf. measurement, standard  
capital, 165-167; cf. inventory, environment, investment  
car, and rock on road, 114-115; log across the road, 160  
cardinality, and ordinality in measurement, 152  
care; cf. lova, attention  
Carnap, 81  
case study, 131-132; (152), 171, 193, 255-256; and generalizations, 79, (108); and fact, 256; cf. ethnographic method, observation, generalization, uniqueness  
catalogue, of opportunities, cf. repertoire

categories, 75-76, 108-109  
catchwords, in management fads, 92  
causality, 23, 44, 110, 113, 126, 131, 134; vs. statistical correlation, 131; in Hume, 130-131; causal hypotheses, 113; cf. explanation, understanding, producer-product, change  
centralization, 67-68; as levels, 76-77; cf. decentralization, hierarchy, levels  
certainty; cf. uncertainty  
certification, cf. validation  
change, 3, 11-12, 12, **14-15**, 18, 41, **43**, 47-8, 50-52, 63-64-66, 77, (160), 175, **194**, **196-204**, 215, 228; resistance to, 14; and politics-law revision, **193-194**, **199**; why, **194**; of object of measurement, **196-197**; optimal, 175; as revolution or counter-theories, **199**; as revision of apriori, 194; and variation and revision in measurement, 191-200, 204; as adaptability to environment, 213; vs. restfulness, 200; as design, p. vii; cf. evolution, stability, process, variation, progress, shift and drift, trial-and-error, bricolage, creativity, learning, improvement, sweep-in, implementation, revision, causality, variation, revolution, flexibility, maturation, development, synthesis  
chaos theory, as example of butterfly vs. storm, 63  
chapter (1), 3, 63, 74, 77  
chapter (2), 19, 21, 95, 97 (ex.), 105, 111, 116, 119, 122, 135, 144, 176-177 (summary), 194, **197**, 241  
chapter (3), 20, 37, 34-35, 42, 39, 40-41  
chapter (4), 37, 39, 79, 116, 144-145, 197-198, 180, 259  
chapter (5), 37, 95, 20-21, 33 111, (Leibniz), (118), 116, 122-123, 144, 177, 194, 242, 259, 105; vs. Leibniz, 241-242  
chapter (6), 37, 128, 20, 70, 87, (95), 106, 109, 111, 116, 126, 149, 176-177, 194, 242, 259, 265  
chapter (7), 20, 37, 149, 70, (95), 105, 119, 147, 194, 215, 249, 265, 271  
chapter (9), 20, 37, 85, 186, 46, 85-86, 105, 119, 211, 214, 222-223, 253  
chapter (10), 209, 238  
chapter (11), 93, 122, 219  
chapter (12), 180, 230, 180  
chapter (13), 237, 229  
chapter (16), 274, 109?  
character; cf. entity, individuation, pattern, property, object

checkers-chess, examples, 22, (125), 138, 142; cf. games  
Checkland, P.; 227-229, 249, 252, 254; vs. anatomy of goal seeking, purpose, will,  
and anti thinking, anti teleology, 247-258; ateleology, 227-228, 252-255; rich  
picture, 71-72, 170-171; and pluralism, 71; cf. Weltanschauung, 169-176  
checks and balances, 169  
chemistry, chap. (4) *passim*, 116, 144, 198  
chess, 22-23, 26, (120), (125), 138, 142, 187 (arbitrary), 189; cf. checkers-chess  
Christ, cf. God, religion, ethics, Buddha, hero  
Church; as design of individual's relationship to his God, 205; vs. expertise in moral  
matters, 163; cf. religion  
Churchman, C.W, on global ethical management, cf. ethics and  
<http://www.haas.berkeley.edu/~gem>  
circle, vicious, 169; cf. vicious circle, infinite regress  
clarity, clearness (cf. simplicity), 20-21  
classes, 33, 108-109, 159; cf. logic  
classification, 33, 36, 42, 117, 159, 186-187, **192**, 204; coding, logical division,  
exhaustive-inclusive, 192; as distinctions, 192, 270; as labelling, 101; of sciences,  
197; cf. measurement, partitioning, distinctions, taxonomy, categories, definition,  
partitioning  
clear, vs. distinct, and simple vs. complex, 19-21  
client, 47-**48**; mankind as generalized client, 65 vs. 67, 200-201; as future  
generations, 201; as an ought, 48; and ethics, 48  
clock, cf. space-time, 106-107, 109-110, 131-132, 134-135; as an a priori, 110,  
astronomical botanical psychological, 110; astronomical, 110, 135  
closed system, 44  
coarse picture; cf. detail, image, clarity vs. simplicity  
coconstruction, as collective mind, 162; cf. construction, cooperation, consensus,  
general will, dialectics, learning  
coconstructive mind, 71, 162, 174  
coding; 117, 192; cf. classification, taxonomy, measurement  
cognition: cf. cognitive models, recognition  
cognitive dissonance, 171  
cognitive models, 156-157-158, 160-161; of value judgements, 102; recognition, 145;  
cognitive science, 161; cognitive styles: cf. styles, of inquiry (chaps. 2-10); cf.  
learning, inquiry, knowledge, mental models

coherence (theory of truth), 33  
collaboration: cf. cooperation, work  
collective conscious, 154, 162, 164  
collective mind, 70, 162, 194, 196  
collective unconscious, 203, cf. Jung, unconscious  
color, perception and observation of, 101, 103, 150-151, 157-158, 164  
comedy, 254; cf. comic  
combination, and imagination, 31-32, 36; cf. creativity  
comic, 178, 205  
command, 115; ; cf. imperative mood  
commerce, Internet-, 165; requiring decomposition principle, 67; cf. inventory  
    wharehousing, e-business  
commitment (cf. conviction, vs. cf. alienation); ontological, basic assumption, 192, 177  
common sense, 19, 135, 162; realism, 19; in pluralism, 71  
communication, 5-6, 35, 107, 118-**119**, **123**, 125, 135, 152, 169, 171, 198; for  
    explicitation of design 155-157; rich, 122; language of, 124; scientific, 61;  
    efficiency of ICT information and communication technology, 137; cf. conversation,  
    language, democracy, agreement, cooperation, Internet  
communicative action; cf. action language, is-ought, Habermas  
communism, 172-173, 222  
community, Lockean, chap. (5), 101, 123, 187, 189, community of minds, 97; of  
    practice, 167; conventional, 150; community or public knowledge, 154; interpretive  
    community, **159**; cf. Lockean I.S. chap. 5 *passim*  
comparative method, 152-153  
comparison, 187; of utilities, 155; and transformation into numbers in measurement,  
    187; cf. measurement, ordinality and cardinality, otherness  
competence, 191, 200, 228; core, 184; in observation as judgment of competent over-  
    observer, 191; cf. knowledge, learning; expert, perfect or normal observer, perfect  
    observer, metadesigner, implementation, practice, evaluation, measure of  
    performance  
competition, between fact nets, 86, 93; cf. chap. (7) *passim*  
completeness, 124; 199, 262; of empirical count, 120, 124; cf. contentment  
complexity, 56, 137; and simplicity, 141; and simplicity, clarity, and distinctness, 19-  
    21; cf. simplicity  
components, as subsystems, 7-8, 49-60, 56-57, 67, 167; cf. subsystems, parts

compromise, 174; cf. negotiation, agreement  
computer as person (ref. Janlert, L-E), 214; cf. behaviorism  
computer science, relevant direct or indirect references to, vii, 6, 9, 11-13, (14), 15-18, 20-21, 25-27, 35, 37, 45, 54, 58-59, 80, 82, 90-93, 101, 104, 112, 115-116, 118, 125-126, 129, 130-132, 137, 150, 158, 160, 171, 195, 197, 212, 214, 216; parsing 20-21, 142-143, 202; executive of operating system, 27; intelligence of, 259; as instrument, **81-94**; support, 6; cf. tool, instrument, Hegelian IS, artificial intelligence, program  
computer support, 115-116, 118; for negotiation, cf. Hegelian IS; cf. tool, instrument, artificial intelligence  
computerization, as logical reconstruction, 195  
computing, science: cf. algorithm, and Leibnizian inquiring systems, chap. 2 *passim*  
computing, ubiquitous: cf. mobile Internet  
conceptual framework, 82, 143; cf. system definition, model, theory  
confidence, 83, 90, 111, 113, 199; cf. trust, conviction, confirmation  
conferencing, 13  
confirmation, 81; degree of, 80, 83; cf. confidence  
conflict, 73, 105, 173-174, 177, 185, 188, 191, 196, 199, 203; resolution of, 174, and cf. diplomacy; of ideas, 177, 185; in measurement, 190; cf. agreement, disagreement, debate, enemy, diplomacy  
confusedness, 96; as related to aesthetic, cf. simplicity, complexity, clarity, distinctness  
connotation, 161; cf. denotation or extension  
consciousness, 28, 39; political, 184-185, 276; cf. self-consciousness, self-reflection, explicitness, unconscious  
consensus, 92; cf. agreement, consistency, chap. (5) *passim*  
conservative, and reactionary, 17, 204; cf. reactionary, revolution, change  
consistency, 31-32, 190-191, **193**, 195, 198; in replications of observation in measurement, 191, 193; as overcoming of inconsistency, 197; cf. agreement, consensus, ambiguity  
construction, 14, 33 & 175 (embryonic models), 56-57 (learning -part of the system), 63 (adaptivity-flexibility-stability), 105, 120 (who), 141 (flexibility), 162 (audit), 169 (picture), 171 (Hegel), 172-174 (coconstructive mind), 176 (cost), 199, 219-220, 227-229, 232, 235, 250, 253-244; as system reconstitution, 67; cf. fact-nets, consensus

construction, criticism of, 33, 63, vs monistic apperception, 75-76; as learning, 108; depictive, 141 & 145; and agreement, 173, 174, 176-177, 194 ; challenge of **198-199** ; vs. embryo, 14, 15, 33; vs. change, 41; as trial and error, 51; as adaptive system, 63; vs depictive reality, 76; as progress, 178; as pluralism and common sense, 71; as collective mind, 162

constructivism, 72; cf. construction

constructs, 72

consulting, 74; and system, 184; cf. expertise, planner, designer

contentment, 199

context, 109, 167; and separability, 54; contextual induction, 109, 112; cf. system, environment, narrative, textualization (Zuboff)

contextual justification, 112

contingent facts or truths, 29-31, 76, **88**, 96

continuous systems development, cf. evolution, improvement, change, revision, coconstruction, stability, learning, reengineering

contradiction, 32, 108, 170, 172, (182); as antinomy in unconstrained reason, 145, 170; apparent, 136; self-contradiction, 31; as stopping of formal inquiry, 70; vs. deadly enemy, 172; vs. contrariness, 182; cf. counter-instance, agreement, conversation, antinomy, self-contradiction

contrariness, 182, 193; logical, 182; vs. dual Weltanschauung, 198; cf. (counter)-hypothesis

control, 135, 150, 158, **196**; as self-reflection, 158; as test of validity of results, 149; cf. guarantor, management, executive, implementation, authority, hierarchy, cybernetic feedback, power, evaluation, monitoring

conventional, 71-72, 101, 105, 112, 114-**115**, 117, **119-120**, 123, 135, 137, **150**, 186-189; community, 150; Lockean inquirers, 115; cf. arbitrary

convergence, 32-34, 95-96, 175-176, 194, 197, 199, 202, 241; of system actor roles, 200-201, 204; cf. **sweeping-in**, approximation, agreement, accuracy, ideal seeking, monism, Singerian inquiring systems chap. 9 (*passim*)

conversation , 70, 112-113, 136, **172-175**, 185; conclusion vs. question, 118-119, 172, 277; cf communication: viii, contradiction, debate, sweep in, conversation killing

conversation killing, 6, 104-105, 144, (174), 198; as uncertainty blocked our of discourse, 202; depictive, 115; convention, 123; 160-164, 173, 198; through contradiction, 70; vs. deadly enemy, 172; cf. disagreement, agreement, counter-

instance, debate, conflict, enemy, contradiction, conversation  
conviction, 98-99, 111, 119, 122-123, 154, 170-174, 177-178, 184, 190, 229; from refinement or precision, 190; as vision, 178; origin of, 174; designer's, 154; as reflective intuition, 107; cf. feeling, vision, commitment, engagement, evidence, credibility, confidence, trust, faith, rhetoric, aesthetics  
cookery, 266; cf. nourishment, gastronomy  
cooperation, 54, 118-119, 121-122, 156, 174, **200-203**, 250, 254; as ethics defined, **200**; cf. learning, implementation, trilogy, production, agreement, politics, ethics, power, democracy, conflict, CSCW, love, charity  
Copernican revolution, 137, 196  
core competence, 184  
correlation, statistical, vs. causality, 131  
correctness, 170; cf. accuracy  
correspondence, reality as, 160  
cost accounting, 65-66, 124-125, 163-164, 167-168; in inventory control, 165  
cost, and benefit, 67, 90-91, 92, 120-121, 124, 141, 163-165-**166**, **168**; 177, 245, 270; of information, 120-122; opportunity cost, 165; and accuracy, 62; of empirical research and politics, **120**; as resource allocation, 156; cost reduction, 124; cf. performance, measure of performance, resource, downsizing, reengineering  
cost, systemic, 55, 141, 167-**168**, 176-177, 188; and empiricism, 120, opportunity cost, 167, 169; marginal, 141; cost effectiveness, 67; and savings, 124  
counter-instance, 194; counter-induction, 111-112; cf. contradiction, perfect observer  
Cranberg, L.; cf. law, 198  
creativity, 3-4, 13, 17-18, 30, 116, 118, 139-140, 142-143, (167), **195**, 205, 216, 243 (religion), 249; as patterns of discovery, 80, 280; and design, 18, 142-143, 205; as discovery, 195; creative act, 243; in finding a rich analogy, **143**; vs. methodology, 262; and the unconscious, 264-265; cf. design, imagination, vision, production, intuition, learning, inspiration  
credibility or credence, 98, 171-175, 190; cf. accuracy, trust, conviction, validity and validation, evidence, proof  
crucial test, 136, 159; cf. test  
CSCW, cf. cooperation, work, action-activity  
Cuba crisis, 98  
culture, 74, 105, 108, 170; cf. Weltanschauung, tradition, paradigm, Lockean community, consensus, history

cumulative knowledge; cf. fact nets, Leibnizian IS, Lockean IS  
curiosity, 26  
customer, cf. client  
cybernetics, 214; cf. control, management  
cyberspace; cf. Internet, community, system  
data, 6, 8-9, 11, 36, 60-62, 72, 84, 90, 114, 125, 132-134, 137, 171, 215; collection of or memory, 6; separability of, 88-91, 110, 114, 132; collection, 153; data and program, 103; and assumptions, 132; economical set of data, 86, 137; vs. theory, 87; as system, 168; v s. information, 171; as optimum model, 171; immediate sense, 151-152; warrant of, 94-95, 169; raw basic data, 82, 99, 125, 133, 137, 165-166; and generalization, 111; immediacy of sense data, 155; representation, 116, 125-126, and chap. 7, *passim*; cf. symbol, input, picture, image, reception, fact, basic data  
data analysis, 88-91, 114  
data base, 9-10, 60-62, 95, 98, **101**, 106, **108-109**, 110, **114-115**, 117, 120-121, **132-133**, 160-162, 164-165-166, 171, 173, 175, 195, 216, 259; as instructions or program 202; as Lockean IS, 99-118; as library, 117, 121; as function of identifier, 106; as filing system, 101; as "is-it-indeed?", 164; as repertoire, 170; as image of reality, **160**; vs. information system, 85; database systems, 121; transmitting data from, to theoretical sector, 132; acceptance of warranted, 195; cf. object orientation, data collection, retrieval  
data collection, 84, 99-100, 106, 110, 114-115, 116, 120, 125, 132, 153, 155, 191; separability of, 132; cf. measurement, empiricism, rich data  
data mining, 115, 132-133; cf. data collection, data base, statistics  
data security, **161**  
data source, 150; collection from, 153  
data structure, 137, 160-161; cf. knowledge representation  
datadelegationen, 177, 180, 183  
dead, clients, (133), 201  
death, 200-201, 203; dead clients, (133), 201; cf. future generations, ancestors, God  
debate, 32, (87), 158-159, 162, 175, 183, 185, 195, 199; as conversation, 174-175; vs. dialectic, 183, 185; and objectivity, 162, **175**; cf. agreement, disagreement, conflict, learning, conversation  
decentralization, 67-68, 196; as pluralism, 71; cf. centralization  
decision, 105-106, 114-115, 164

decision makers, 43, 47, 52, 68, 92, **200-201**; choice of, 52; and designer or planner, 66, 68; as leaders and heroes, 200; cf. management

decomposition principle, 67

deduction, 94; and induction, 145; cf. induction

definition, **4**, 29-31, 77, 136, 205; operational, 115, 187, 191; redefinition, 136; cf. distinction, classification, translation

degree of freedom; cf. handlingsutrymme, freedom, tolerance, politics, power, negotiation

deliberation; cf. judgment, inquiry (*passim*)

deliberative polls, cf. democracy, democracy electronic

Delphi technique, 106; cf. opinion surveys, disagreement

demand, 166-167; cf. client, marketing, need, advertising

democracy 61, 68, 77, 105, 108, **123**, 149, 158, 163-164, 169, 172-173, 176-177, 188, 194, 196, 203, 269; and law or legal system, 108, **123**; and information, 176-177; as community knowledge, 154; as collective mind, 162; in inquiry, 268-269; as checks and balances, 169; as infinite regress, 169; as mutual observation, 154-155; as agreement in replication, 190; as decentralized control, 196; elec tronic e-democracy or governance, (123), 269-270; cf. participation, cooperation, majority, commitment, work, agreement, pluralism; vs. alienation, marxism, communism, power, law, justice

Democritus, 209

demonstration; cf. absurdum, axioms, proof, test, validity, truth, conviction

Dendral, AI-system, 98

denotation or extension, 161

depiction, cf. description

Descartes, 22, 62, 70

description, depictive, 76, **115-116**, 120-122, 124-125, 135, 140-141, 145, 159-160, 163-164, 166, 170-171, 178, 195, 209; descriptive research, 120-121, 125; error as accuracy of, 201-202; vs. design, 135; descriptive vs. normative model, **133**; cf. image, representation, reality, depiction, qualitative methods, normative, is-ought

descriptors, 193; cf. attributes

design, vii, **5-17**, 48-49-50, 55, 74, 80, 97, 131, 135, 138, 150, 153-155, 162, 165-167, 169, 171, 173, 180, 205, 258, (276); defined, 5, 8, 14, 55, 59-60, 205, 258, 276; theory of, **262, 264**, 267; prolegomena to, 16; subjectivistic theory of, **155**; assumptions of, 123; choice of, 56; and judgment, **175**; economy of, 142; and

difficulty of planning, 153; essence and objectivity of, **159**; and hypothesis creation, 116; explicitness of, 155 and cf. explicitness; economy of, 141; strategy of, 194-195; of agreement, 157; vs. description, 135; as system, 55; as feeling of appropriateness, 142; and anti teleology, 247-258, 249; and living idea or vision, **173**; ateleology as basic design, 227-228, 252-255; of a priori, 130, 142; ideal design, 74; of calibration, 152; of observation, 119; and creativity, 204-205; of degrees of freedom of action (Swedish *handlingsutrymme*), 164; of designers, 43, 47, 52, 55; dynamic, 64; intuition in, 25; long range, 48-49; and morality, 249; parsimony, 134; and problems in nature of inquiry, 259-273, 276; of science, 195, 201; and God, 205; separability of, 54, 66-67, 145-146, and "ought", 74; short range, 48-49; of simple inputs, 99; of input, 137-145; simplicity in, 78; of systems, 62-63-64; of input, 128; creative, 143; of an apriori, 130; experimental, 60; and Spinoza, 72; and short-long range goals, 48-49; and is-ought design vs. description, 135; design situation: cf. uniqueness, uncertainty, conflict; basic design and logical reconstructionism, method, 195; vs. description, 135; for objectivity, 149; participatory: cf. participation vs. alienation; of agreement-standard, 189; and history, 190, 195, 197; design system vs. system, 62-63, 111, 115; as change or as leadership, 50; critical design problems for I.S. with maximal apriori, 142-144; cf. creativity, form, function, creativity, intuition, romanticism, vision, ideal, stability, quality, method, learning, explicitness, implicitness, education, implementation, cooperation, tacit knowledge, construction, production, development, aesthetics, progress, Rittel H.

design work, the hidden rationale, 5, 8, 20, 32, 41, 43-46, 54ff, 125-126, 141-143, **153-156**, 170-173, 243-245, 255, 262, 265, 276; practice vs. imagination, 13; creative act, 17; imagination, 30, 32; elegance, 37; design rationality-ethics-aesthetics, (38), 49; personal non-theoretical knowledge, 87-88, 150; observed (design of design), 150; as personal vs. community knowledge, **154-155**; explicit design, 154; and method, 171-172; design process and reflective intuition, 107; cf. tacit knowledge, *parti*, judgment

designer, 43, 47-48, 56, 81, 91, 120, 146, 150, 153, 155, 158-159, 162; as having a peculiar and separate role, 150, **153**; as true paradoxical non-designer, **155**; behavior and designed designer, 150; anti teleology of, 249; vs. decision maker, 66, 68; as observer, 159; subjectivity of, **115**; identity of, **146**; isolation of, 120; vs. user, 118; designer's type of feeling against method, **92**; designer's knowledge, 154; and politics, 66; as observer, 150; designer's conviction, 154;

return home of from glamour, 203; cf. metadesigner, planner, expertise  
detail, 87, 175, 190; as refinement, 190, 192; cf. partitioning,, subsystem of system,  
level, hierarchy, classification, refinement, attention  
determinism, 209-210; cf. mechanism  
development, 224, 229; cf. learning, progress, evolution, change  
Dewey, J., 189; cf. pragmatism  
dialectic, 170, 177, 182, 199, 245, 262; planning, 180; life of, 175; conviction in, 172;  
deadliest enemy in, 172; drama-theater in, 172, 178; and epic, 175; eternity of,  
245; Hegelian, 170; in humor, 174; in judgement, 175; and leisure class, 176; long-  
range planning, 184; and political process, 185; and public information, 271; of  
science, 224; dialectic within dialectic and isolation of dialectic process, 183-184;  
transcendental, cf. Kant  
dialogue, cf. dialectics, conversation, language, sweep in  
dice, example, 109  
dichotomy, 159, 177; cf. classification, taxonomy, coding, analysis  
dictionary, 29, 33  
difference, make a, 164; cf. pragmatism  
digital information, 161  
diplomacy, as avoidance of misunderstandings: cf. Leibnizian I.S.; as creation of  
consensus: cf. chap. 5; as syntesis of opposition: cf. chap. 7  
disagreement, 105, 113, 119, 162, 188, **193-194**, **199**; as significant variance or  
variation, 193; cf. conflict, agreement; conversation killing, Delphi technique  
disciplinary science, 74, 195, 200; vs. interdisciplinary, 198; cf. discipline  
disciplines, 40, 74, 195, as de Raadt modalities, 197; disciplinary knowledge, 200; cf.  
interdisciplinary  
discourse, 103; cf. narrative, conversation, agreement, argumentation, dialectic,  
sweep in  
discovery, 195  
discrimination; cf. partitioning, classification, precision, accuracy, definition  
dissent, 105; cf. disagreement  
distinctions, 270; partitioning, 175; between types of validation, 225; cf. taxonomy,  
classification, taxonomy, coding, measurement, definition  
distinctness, vs. clarity, and simple vs. complex, 19-21  
distributed intelligent systems, 196; cf. mobile Internet  
diversity, 104, 204; cf. otherness, pluralism, uniqueness, individuation

dogma, 162, 237  
don Juan syndrome, 11; cf. hero, 202-203; cf. restlessness  
Dooyeweerd, Herman; cf. multimodal, Donald De Raadt  
double interact, cf. Karl Weick, 99-100, 102-107, **118-120**; cf. agreement, cooperation, organization, Newton's syndrome  
doubt, 109, 114, 172-173, 175; as a design method, 24; uncertainty of, 105; cf. probability, risk, uncertainty, vagueness, faith, belief, trust, hope, skepticism  
downsizing, **124, 165**; as cost reduction, **141**; as management fad, 92-93; cf. reengineering, cost reduction, just in time, efficiency, effectiveness, productivity  
drama, as living reality, 170-173, 175, 178, 181, 203, 244; cf. narrative, myth, rhetoric  
Dreyfus, H., 16  
drifting, or drift in the use of technology; cf. shift-and-drift, function-creep  
duplication, cf. replication, uniqueness  
dynamic knowledge or learning, 112; cf. evolutionary, learning  
ecology, 144, 202; cf. pollution, aesthetics  
e-commerce, cf. Internet commerce  
economics, 25, 37, 67, 120, 122, 124, 137-138, 141, 152-153, 163-168, 176, 211; of information, 124; mathematical, 25; and social aspect, 124; cost accounting, 65-66; economic value of simplicity, 138-139; economic theory, 152; of data bases, 120-121; of information, 124; cf. cost, benefits, capital investment, profit, measure of performance  
economy, of inquiry or thought, 15-16, 86, 120, 124, 137-138, 217; as effectiveness vs. parsimony, 141; of computation, 37; economical set of data, 86; of simplicity, 137-138, of time, 81  
education, 184, 230, 268-269; and implementation, 230-236; graduate, **268**; theory of, 230; and learning, 159-160; educational process, 158; cf. learning  
effectiveness, 43, 133, 137; of inquiring systems' sectors, 133; as simplicity, 137; as economy, vs. parsimony, 141; vs efficiency, **137**; cf. measure of performance, separability, efficiency, productivity  
efficiency, vs. effectiveness, **137**; cf. effectiveness, parsimony, productivity  
EIS, cf. executive infelligence systems  
electronic commerce etc., requiring decomposition principle, 67, 165; cf. Internet elegance; 120; cf. aesthetics  
elementary, as simple and clear, 19  
elements, 19; cf. input, entity

elephant and blind men example, 150, 159  
elusiveness, 4, 18, 28, 195; cf. explicitness, intuition, tacit knowledge  
emancipation, 13  
embodiment, cf. body  
embryo, 33; embryonic incrementalism, 41, 64-65, 228; as Newton's syndrome, 64;  
cf. adaptive system, evolution  
emotions, 203; cf. mood, feeling, conviction, value  
empiricism, 40, 61, 68, 71-72, 95-102-127, 116, 129, 131-132, 134-135, 146, 150-  
153, 155, 166, 171, 242; logical, 160, 166; and information, 166; and cost, 120;  
naive, **191**; philosophically astute, 150; empirical investigation, 134; minimalistic,  
134; subjective, 153; presuppositions of, 110; British, 151; vs. mathematics, **112**;  
empirical method inquiry, 110, 112, 116, 121, 123-124, 155; completeness of  
empirical inquiry (cf. statistical sampling), 120, 124; empirical research's cost and  
politics, **120**; empirical language, 125; is-ought linguistic puzzle of, 102, 202; cf.  
experiment, experience, observation, sensation, perception, data collection,  
Lockean IS, chap. 5, *passim*, practice  
empowerment, 200; cf. autonomy, participation, politics, power  
end, 45; and religion, 242  
enemy, 98, 172, 180-181; 98, knowledge of; deadliest, 172-173, 178; cf. conflict  
England, empiricism developed in, 150  
entanglement, 167; cf. system, context  
entelechies, 39  
entity, 45, 93, 99, 104, 108, 106, 125-126, 129; as "it" or "what", 128; teleological, 93;  
process as entity, 100; entity relationship, 34; cf. object, system, subject,  
individuation, uniqueness, element, actor  
environment, 8, 13, 42-78, 150-151; esp. 51-52, **56**, 63; 166-167, 247-248; of  
science, 200; control of, 167; as informational constraint, 164; as size or limits of  
system, 56; as higher-level; cf. input, external Weltanschauung, 174; cf.  
separability, input, context, Swedish "handlingsutrymme", "milj"  
EOQ (economic order quantity), 165  
epic, 174, 177, 182, 203; cf. drama  
Epictetus, 252  
epistemology, 17-18, 103, 155, 171-172  
ERP enterprise resource planning; as management fad, 92-93; cf. manufacturing,  
management information systems MIS

error, 113, 136, 201-202, 242  
esoterism, 58, 184, 200; cf. exoteric, accuracy, measurement  
essence, 27-28, cf. existence, 76  
ether, 238  
ethics, 12, **48-49**, 63, 70, 73, 163, 197-**198**, **200**, **202**, 216, 218, 222, 255; morals 6, 17; personal, 200-201; as function of clients, 200-201; as good intentions; vs. authority-responsibility, 196; as power or cooperation, 200; and power, knowledge and beauty, 73; and theology, 200; ethical judgement, (202); vs. value measurement, 152-153; of imperative, 202; cf. values, good, conviction, goal, purpose, is-ought, greed, God, guarantor, warrant, cooperation, URL: <http://www.haas.berkeley.edu/~gem>  
ethnicity, multi-, (182)  
ethnographic method and observation, 119, 121, **125-126**, **138-139**, 154, **156**, 159-160, **166-167**, 171, **195**; cf. qualitative method, scientific method, observation  
evaluation, 136, 263-264; empirical, 110; cf. value, utility, quality  
event, 134, 136: cf. message, information, function, action, transaction  
evidence, 55, 63, 76, 112, 152, 164, 172; knowledge and probability, 55; credibility or credence, 173; vs. mood, 203; self-evidence, 27, 162; objective, 119; cf. counter-instance; cf. proof, truth, relevance, validity  
evil, 72, 76; cf. ethics  
evolution, 33, 63-66, 112; positivism as, 63, 66-67; evolutionary adaptive system, 63, **175**; as progress, 178; cf. flexibility, adaptive, growth, progress, incrementalism, learning, change, improvement, change, survival-reproduction, coconstruction, reengineering, embryo, adaptive system  
examples, pedagogical in the book; cf. bird (and egg, swan), dice, elephant, log, rock, sawmill, toothache, radarscope, swan, sales statistics, color perception, log across the road, sailing and smaller mind, spectacles, checkers-chess, ticktacktoe, magic square, hawk-dove, mother and quarreling sons, stooge, table or desk in measurement, monkey brain, rain today, butterfly and storm, Cuba crisis, scratches on photographic plate, young Lockean investigator, professors and dissenting students  
excluded middle, principle, 108  
executive, 27, 33, 36-38, 142, 145-146, 148; operating system, 27; executive intelligence system, 97, 112-113, 118, 124, **175**; ; executive intelligence I.S.: cf. control, strategy, intelligence, information systems, (operating system)

exhaustive classification or taxonomy, **192**  
existence, 71, 76, 78; cf. ontology  
exoteric, 200, 219-220, 225, 237, 268; cf. esoteric  
experience, 26, 100, 119, 129, **135**, 144, 148, 170, 250; meaning of, 70; learning by, 131; human, 119; cf. learning, perception, sensation  
experiments, 42, 60, 63, 73-75, 85, 87, **113**, 134-136, 159, 183-184, **192-194**, 198-199, 229, 231, 235; as systems, 60; experimental results and theory, 192; statistical, 183-184; experimental method, 113, 135, **191-194**; positivistic, 60; as alienation, 159; Galilei's, 132; thought experiment, 191; experimental design, 113, 182, 183-184; experimentation, 51, **192**; cf. replication; cf. chap. (12) 230ff;  
expertise, 49-50, 74, **82-83**, 87, 99, 101, 111-112, 114, 162-163, 168-169, 176-177, 180, 183, 268-**269**, 272-273; and information, 101, 114, 118, 162; in inquiry, 87-88, 99; test of, 163; in systems science, 231; defense of, 269; as subsystems separability, 53; and monism, 73-74; and democracy, 176; cf. designer, consulting, specialization, artificial intelligence, expert systems, systems separability, peer review, idiot savant  
explanation, 4, 6, 26-27, 35, 37, 41, 46, 80, 83, 85-86, 100, 104, 136-137, 154; unexplainable events, 136; explanatory model, 80; cf. why, because, meaning, implication, interpretation, understanding, interpretation  
explicitness, 145, 154-155, 171, 175, 177-178, 186, 194; giving up, 175, 177-178; cf. implicit, tacit knowledge, design, subjectivism  
exploration, and innovation; cf. innovation  
explosion, of information, 176, 267; cf. expertise  
expressing information, 137; cf. gestalt  
extension, 77, or denotation, 161; cf. intension  
external, 20, 33, 35, 36, 84, 122, 128, 144, 149, 151, 157-159; cf. input, environment  
extrapolation, 210  
facilitator (neutral observer), 159; as synthesizer, 174; cf. negotiation  
fact (nets), **32**, 37, **39-40**, 79, 86, 88, 111, 127, 141, 143, **160**, 164, 197, 225; top-bottom-end (of implication) 32, 39-40, 79, 88; in inducer, 143; in intelligence, 98; in Leibniz, 32; in organic chemistry, 82; ranking of, 34, 37; as likely truth, 32; as information, 160  
fact, **32**, 86, 90, 150, 160-161, **164**; simple, 108; objective, 158; and action, 164; and value, 164; as likely truth, 32; and alienation of self, **161**; fact nets, 95, chap. (2) *passim*; cf. truth, data, past, evidence, information, empiricism

fads, or research or management, 92  
faith, (164), 229, 237, 240-243; and science, 240-246; and belief, 24; cf. belief, guarantor, conviction, trust, hope, doubt, religion  
falsification, 24, **40**, 88, 98, 136, 199, 220; cf. error, truth, conviction, encryption, coding  
fantasy, 96; cf. imagination  
fascism, and socialism, 68  
feasibility, 63; as approvability-probability, 211; cf. implementation  
federative or federation, cf. system  
feeling, 13, 76, 119, 151, 161, (203), 261-**262**-264, 270-271; as primacy of the subjective, 151; as commitment, 171; sensation as surrogate of, 264-265; subjective, 114, 155, 158, 161; as mood, 182, 203; of appropriateness in design, 142; cf. mood, intuition (as "right feeling"), love, conviction, experience, sensation, emotion, postmodernism, unconscious, romanticism  
Feigenbaum, E. A., 79n, 100  
Fermat P. and mathematics, 112  
figure, of thought, 158, 169, 171-172; cf. image, vision, myth, symbol, metaphor, aesthetics  
file, 101; cf. database, library  
filter, of information, 96, 98  
fitness, as appropriateness, 262  
flexibility, 63-64, 110, 141, as change, 194; as adjustment of measurements, **196**; cf. evolution, learning, adjustment, stability, change, adaptive  
flow, (28, 155); as process vs. progress, 203-205; cf. fitness, process, creativity, imagination, intuition, inspiration, enthusiasm, progress, learning, romanticism  
forecast, 105-106, 110, 131, **133**, 150, 153, 165; cf. prediction, regularity, replication, generalization, past, future, history, improvisation, bricolage  
foreknowledge, 109; cf. apriori, assumptions, presuppositions, user model  
form, 29; logical, 108; cf. formal, experience, feeling, aesthetic, sensation, value, judgement, morphology, structure, experience, function  
formal, 29, 70, 140, 171-172, 186; formal science, 129-130; formal thinking, 6; cf. logic, mathematics  
formative context, (166); cf. environment, system, practice, praxis  
fourth-box imagery, 216, 243  
fragmentation, 202

framework, 110; conceptual, 72, 143  
freedom, 11-12, 245; of inquiry, 58, of the press, 196; 71; of action, 164 and cf.  
degree of freedom in action (in Swedish) *handlingsutrymme*, 7, 13; academic, 58;  
cf. stability, responsibility, autonomy, power  
function-morphology/structure-teleology, 44-45, 197, 214; in Ackoff's book *Scientific Method* 155-163; of systems, 75; basic functions as apperception, 75, 78; as  
action-activity; psychological, 261; functionalism, (204); cf. form, biology, Ackoff-  
Emery's book *On Purposeful Systems* pp.19-32  
functionality; cf. measurement of performance, satisfactoriness, quality, aesthetics  
future generations, 59, 247, 201, 254; vs. past, 201; as client, 201; cf. death,  
ancestors  
futures research, 131; cf. forecast, prediction, cause, past-future  
fuzzy sets, 105, 214  
frutsttningsslshet (Swedish for no presuppositions), 124; cf. apriori  
Galilei, G. 132; debate (112)  
gambling, 241; cf. play, humor  
game theory, 64, 153, 168, **235**, 241; and nature, 238; cf. gambling, games  
games, 23, 125, 138-139, 235; cf. checkers, chess, ticktacktoe, magic square,  
virtuality, drama, play, rules  
gastronomy, cf. cookery, nourishment  
general systems theory, **41**, 75, 77, **78**, 93, (168)  
general will (Rousseau), 162; as supreme objective mind, 174, 176-177; as collective  
absolute mind, 70; and group mind, 68; as good collective mind, 70  
generalization, **8**, 79, 94, 108-110-112, 123-130-132, 145, 152, 245, 257; as learning,  
108; sector of inquirer, 130; vs. counter-instance, 111-112; see particularly: 114,  
125, 129, 142, **256**; vs. input, 130ff; cf. induction, learning, client generalization  
genetic engineering; cf. molecular biology, 197; cf. information and chap. (2) *passim*  
geodetic survey, coast and, 187  
geographical information systems - GIS, see space-time framework, action,  
representation, object-orientation  
geometry, 28, 128-129, 134, 136-137, 197; alternative, 129; Euclidean vs. hyperbolic  
solic, 136; of physicists, 137; and arithmetic and kinematics, 197; cf. space  
Gestalt, as expression of information, 137-143; cf. pattern, expression, representation  
GIS, cf. geographical information systems  
goal; goal-seeking behavior, 210, 213; vs. ideal vs. overall purposeful activity, 5;

partial, 73; teleology, anti teleology, ateleology, action  
God, 12, 23, 24, 33-34, 36, 69-70, 72, 74, 95, (176)-177, 203, 205, 241; and intuition, 28, 243; in Leibniz, 33-34; as manager, 74; as the whole and overall system, 69-70; proof of existence, 23, 33-34, 70, 263; and research, 244; as scientist, 74 vs. 96; as supreme objective mind, 174, 176-177; as general will, 162; as cooperation, 200; as Buddha, 204; as endless approximation, 199; and the hero, 205; message from and hero, 203; design of relationship with / heroic mood, 205; Hegelian 177-178; as theological "whole breadth of inquiry", **196**; cf. religion, guarantor, warrant, Christianity, ethics  
good, 12; in rationalism, 73; ranking of goods, 73-74; as power in design, 6, 3 vs. 12; cf. ethics, values  
gossip, 98  
government; cf. state government, management, monism, executive  
graduate education, as young researcher, 121, 199  
graph, 83, 181  
greed, and hypocrisy, 173  
grounded theory, 61-62, 84  
group mind, 68  
grov bild (in Swedish), cf. coarse picture, vision, image, simulation, detail, vs. skarp milj  
growth, cf. evolution, progress, incrementalism, learning, improvement, change, coconstruction, reengineering  
guarantor, 59, **62-63**, 47, 53-54?, 59-60, 62-63!, 68, 71, 73, 76-78, 93, 98-99, 105, 123-124, 144-145, 160, 162, **176-177-178**, 201, 204-205, 216, 229, 237, 239-240-241, 276; design of, 23; in Lockean IS, 115, 123; external Hegelian, 145; and nature, 274; and future generations, 247; as Hegelian Absolute Mind, 174; as information master vs. slave, 161; for the elephant and the blind men, 159; as Hegelian over-observer, 191; of a clock, 135; of reality of inputs, 123; cf. control, warrant, belief, faith, God, ethics, conviction, security, trust  
Habermas, J., as faith in the existence of agreement, 243; cf. action language, is-ought, Werner Ulrich, (Austin), (Searle's) speech acts  
Hadamard, 28  
handlingsrationalitet, cf. action, response  
handlingsutrymme (Swedish for environment, degrees of freedom in action) and design 7, 13, 105; cf. environment, resources, functional class, external, situated

action, autonomy, freedom, politics, oppression, conflict, agreement  
hawks, and doves, 182  
Hawthorne (idea), 54  
HCI, cf. human-computer interaction  
HCS, Ivanov's "humanistic computing science" (references to)  
Hegel, G.W.F., 35, 70, 105, 158, 170-172, 191, 194, 235, 245, 249; move to Hegelian  
from Kantian I.S., 265  
Heidegger; cf. phenomenology, interpretive, ontology, existence, being, otherness  
Hempel, 256  
heritage, 201  
hermeneutics, cf. **sweeping-in**, interpretation, understanding, meaning, apriori,  
aspects, translation, conversation as pp. vii-viii, learning  
hero, 200, 203-204, 244; and his god, 205; heroic mood, 202-203; design of, 204; cf.  
epic, drama, narrative  
heuristics, 27, 82-83, 144; search methods, 38  
hierarchy in systems, 76-77, 144; levels, 76, (105); and participation, **77**; cf. authority,  
levels, authority, power, separability, components  
Hillman, J., 178, 203, 280; cf. Jung  
history, 133, 160-161, **166-167**, 190; past vs. future, 110, 131-132, 133, 150, 153,  
160, 166, 256; of observations, 191; of science, 193; importance of, in design,  
190; cf. forecast, prediction, past-future, future, past generations  
hope, 237; cf. faith, trust, belief, religion, future generations, doubt  
horizontal organization, **196**; cf. network  
how, 194-**195**; cf. why, what-how  
human component or dimension, humanness, capabilities of human component, 97,  
118; cf. humanism, social, individuation, uniqueness  
human-computer interaction HCI or CHI, 117-119, (121), 125, 137, 159; as time for  
performing a task, 15; human systems components, 118; translation into the  
language of the user, 125; cf. interactivity, reaction-response, support, computer,  
work, usability, time savings, HCI, CHI  
humanism, Enlightenment's, 255-256; as individuality, 277; cf. personal knowledge;  
cf. individuation, uniqueness  
Hume, D., 119, 131; problem of, 110, 119, 131; cf. skepticism  
humor, 174, 177, 203; of science, 235; cf. tragedy, comic, play, game  
hypermedia, 9, 13; as sensation-surrogate of feeling, 264-265; cf. drama, aesthetics,

sensation, postmodernism, anti teleology, ateleology, synaesthesia, play, network hypersystem, 52, (121), 149, **155-156**, 158-159, **169**, 175, 191, 196, 199; actor roles in, 200-201; as apperception, 73-74

hypertext, 117, 128

hypothesis, **80**, 83, 89, 172, 192-193, 199; formulation, 194-195; vs. counter-hypothesis, 199; testing, 115, **192-193**, 196-197, **199**; cf. thesis, contrariness

icon, 20; cf. picture, image, sign

idea, 20; innate, 145, chap. (2) *passim*; cf. innate ideas, vision, input, intuition

ideal, 199, 201; and real, 178, 256; ideal design, 13, 74; idealist and realist cit., **199**

idealism, 199, 204; and realism, 245

idealist, 199, 245; vs. realist, 199

identification, 36-37, (44), 48, 82, 85, 93, 100-101, 103-104, 106, 111, 124, 127-128, 131, 151, 193, 255-256; and individuation, 111; as conventional identifier, 72; identifier, 106; cf. individuation

idios (idiography), 245, 256

idiot-savant, 32, 139-141, (216-217), 222, 260; ; cf. expertise

if-then, 80, 94, 103; cf. implication, indicative "is", imperative "ought"

illocutory forces, 102; cf. action language, imperative, indicative, is-ought, (Austin), (Searle)

illusion, 157, 204, 262; cf. virtual

image recognition, 38, 125-126, 138-140

image, 20, 76, 100, 103, 151, 159, 200; of the mind, 151; of reality, 202-218; ideal scenario, 171, 177; of nature, natural, 159, 194, 209-212; as image-picture of Weltanschauung, 169; images of inquiry, 209-215; as picture inputs to Leibnizian IS, 20; as advertising or propaganda, 183-184; processing of, 124; as pattern of behavior, 5; as "arrows and boxes", 107; natural or imagery, 194-195, 197-198, 209; cf. vision, depictive, Weltanschauung, symbol, Jung-archetype, picture, natural image, ideal

imagination, 13, 18-19, 27, 30, 32, 36, 96, 116, 122, 127; cf. creativity, design, fantasy, aesthetics, combination, metaphysics

immediacy, of sense data, 155

imperative mood, 102-3, 105, 115, 201-202, 247; judgment of acceptance of instruction in, **164**, 202; and linguistic puzzle of empiricism, 102, 202; cf. indicative; cf. is-ought, ought, deontic, action, instruction

implementation, 5, 13-**14**, 18, 47-48, 52, 59, 65-66, 92-93, 114-115, 180, 193, 199,

219-229, 230-236, 269, 274; causes of failure, 232-235; cf. action, politics, measure of performance, satisfactoriness, teleology

implication, 26, 31, 37, 39-40; cf. inference, induction, deduction

implicitness, 178; and explicitness, 155; cf. explicitness

impression, 119; cf. sensation

improvement, 111, 153, 165, 201; cf. learning, progress, change, evolution, measure of performance, chap. (7) *passim*

improvisation, **11**, 41, 63, 83, 120, 153, **124**, 153, (167); and planning, 41; as circumambulatio, 205; as storm sailing, 11; cf. change, situated action, bricolage, shift and drift, postmodernism, satisfactoriness and satisficing, vs. forecast, prediction, planning

income, measurement of, 189-190; cf. benefit

inconsistency, and its overcoming in reading, 197; cf. consistency

incrementalism, 41, 65, 71, 228; cf. trial & error, change

independence, 191; cf. autonomy

indicative mood, 102-103, 105-107, 109, 115, 135, 168, 201-202; as expert judgment, 164; cf. is-ought, imperative, mood of propositions

individualism, 4, 68, 71, 154-156, 193, 202, 204

individuation, 36-37, 111, 129, 131; and identification, 111; by space-time, 110; and uniqueness, 204, 245; vs. classes, 108; as same-another, 151; Jungian process of, 262; cf. identification, uniqueness, entity, object, item

inducer (induction) and fact net, 143

induction, 26-27, 79, 83, 87, 94, 108-110, 111, 115, 123, 124, **145**, **151-152**; explanation of, 80; justification of, 79; Lockean, 112, 123; problem of, 80, 88; and deduction, 145; strategy of, 111; as a system, 90; Mill's laws of, 113; inductive logic, 123; classical 79, 83; cf. generalization, deduction

inference, 94, 151-153, 191; from observation, 87, 152; cf. induction, implication, deduction, generalization, learning

infinite regress, 178; regress or vicious circle, 168-169, 188

informatics, as method-science, 60, (74); cf. information, information systems

information; 9, 147, 85, 121, **159-162**, 164-5, 167-168; **171**; structure 136-137 & 139; auditors, 162; additional or knowledge, 85; and politics, **121**; and authority, 164; basic, 165; expressing (gestalt), 137; bureaucracy, 162; explosion 91, 267; and event or message, 136; interpretation of, 137, 142; the conquering lord, 161; economics of, 124; empiricism, 166; experts, 162; in inventory control, 165; and

mind, 160; master-and-slave, 160-161; morality, 163; public, 176; reception of, 100, 128; retrieval of, 101, 162; and teleology, 163, 165; mathematical theory of, 161; and Weltanschauung, 169-179; digital, 161; systemic, **167-168**; teleological, 165, 167-168; structures of, 137; human as information processing, 161; vs. data, 171; society, 217-218; for action: see log, rock, action; cf. data, fact, input, message, event, knowledge, bits

information system, 54, 56, 62, 85, **167-168**; as part of or vs. system, 56, 60; as design system, 54; as model or data, 61-62; reality of, 72; vs. data base, 85; analogy to "total generator plant", 72; as production system, 141; and organization, **121**; executive and strategic, **175**; cf. data base, information vs. object, metaphysics or ontology, inquiring system, *passim*

information technology IT, cf. computer, communication, informationinnate ideas, 33-36, 84, 105, 116, 122, 145

inheritance, 108

innate ideas, chap. 2 *passim*, 145

inner process, 107

innovation, sociology of, 93, **193-194**; as restless change, 199-200, 203; and exploration (of e.g. technology), 193, **199**; and heroic quest, 203-204; cf. creativity, change, technology spread acceptance assimilation

input model, 142-143

input, 19, 20-22, 33, 35, 45, 96, **84**, 86, 91, 96, 99, **100**, 106-**107**, 116, **118**, 128, 137-138, 142-145-**146-147**-148, 151-152, 154, **157-159**, 167, 196, 239, 265; as validated received entity, **107**; input process, 99-100; mode of receiving, 137; inputs and models, 140, 143, 147-148; arrows and boxes, 107; as stimulus, 159; reality of, 122-123; as mode of receiving information, 137; as inside/outside, 96, 151; distortion of, 156; adjustment of **196**; as part of the unconscious, **265**; cf. observation, measurement, information, message, apriori, inside-outside; environment, idea, reception, data collection, problem definition

input-output; representation of observer, 84, 156

inquirer (not a special type of person), 268

inquiry: as production system, 141; error in, 113; simplicity of, 142

inside-outside, 96, 150-151; cf. input

insight, 81

inspiration; cf. creativity, intuition, imagination

instruction; cf. is-ought, learning, imperative mood, program

instrument, **81-83-94**, 115-116, 136; vs. theory, 83; teleological, 93-94; test of, 83; cf. tool, means, measurement

intellect, 27, 145

intelligence, 4, 16, 97, (125), 137, 140-141, 143-145, 259-260; intelligence test, 39, 140-141, 143; cf. artificial intelligence, distributed intelligent systems, intelligent agents, reason-intellect, mind, knowledge

intelligence systems, military, 97-98, 124; cf. strategy, enemy, competition

intelligence tests, 143

intelligent agent, cf. agent artificial, artefact, artificial intelligence AI

intelligibility as design, 145, 155; cf. explicit

intension, 77; cf. extension

intensity, of impressions, **107**, 119; cf. sensation

interaction, 31, 43-46, 159, 168-169; cf. action, reaction, response, stimulus, dialectics, communication, cooperation, learning, conversation, sweep in, human-computer interaction HCI-CHI

interactivity, 15-16, 83ff, 106, **159**, 168, 170, **171-174**, 183; cf. action-activity, reaction, response, human-computer interaction

interdisciplinarity, 40, 74-75, 195, 197-198, 200; cf. system, transdisciplinarity, apperception, sweep in, conversation, perspective, aspect, Weltanschauung

interface, 151; cf. separability, interaction, action

internal-external (cf. input), 26, 26, 33, 36, 84, 107, 122, 128, 138, 144-145, 151, **156-157**, 159

international body, authority of, 188

Internet analogies, **9-10**, 13-16, 26, 61-62, **117**, 120-**121**; Internet design, 128; navigation browsing retrieval, 62, 117; Internet commerce, 165; as scientific communication, 61-62; requiring decomposition principle for business analysis, 67; cf. library, communication, database, hypermedia, network, World Wide Web

interpolation-extrapolation, 112; cf. partitioning

interpretation, 110, 136-137, 142; ease of, **137**; of data in Weltanschauung, 110, 169-170; of sensory responses, 194; of information, 137, 142; cf. meaning, perspective, understanding, explanation

interpretive approach, 49, 158-160, 170-**172**, **174**, 176, **181-185**, **198**; cf. phenomenology, understanding, meaning, life, intersubjectivity

interpretive community, **159**; cf. chap.(5) *passim*

interrogative mood, cf. mood of propositions

intersubjectivity, 149, 159, 169; cf. hypersystem, interpretive approach  
intervention, 171; cf. participation, cooperation, conflict, politics, implementation, reality  
interviews, and alienated experimenters, 159; interview technique, 120-121; cf. conversation, data collection, questioning, understanding, explanation, interpretation  
introspection, 107, 129, 150-156; as inner process or reflection, 107; cf. subjectivism, reflection, self-reflection; (sensuous) intuition, mind  
intuition, 21, 25-28, 71, 76, 80, 81, 84, 87-88, 90, 92, 114, 119, 120-121, (150-151), 153-155, **158**, 171, 176-177, 194, 203-205, 243, 261-263; as subjective feeling, 114, 119; as common sense, 13; Spinozian, 25-28; as poetic fashion, 153; reflective, 107; sensuous, 131, 145; as aesthetical fitness, 80; having a feel vs right feeling, 90; aesthetic intuition, 124; cf. judgment, creativity, imagination, perception, sensuous intuition, unconscious, elusive, drama, romanticism, inspiration  
invariances, 156; cf. change, trial and error, stability  
inventory model, 53-54, 165-166; cf. Internet commerce  
investment, 167; cf. economics, capital  
irony, cf. humor, drama, narrative  
irrationality, 159; cf. rationality, evidence, truth  
IS, cf. information (system), 159-168  
is-it-indeed, database as, 164  
is-ought, 52, 54, 56, 74, 102-103, 115, 133, 164, **168**, 198, 201-**202**; in prediction, 110; and linguistic puzzle of empiricism, 102, 202; cf. ought, instruction, ethics, indicative, imperative, description, action  
isomorphism (cf. general systems theory), 11, 110, 125, 154  
it, 128; cf. entity, individuation  
IT-information technology, cf. computer, communication, information  
item, 101, 104; cf. individuation  
iteration (cf. self, recurrence-recursivity), 135-136  
Ivanov\*, Kristo (project SAF on privacy, integrity, and rule-of-law), 123!, 155, 167, 172, 174, 175!; checks and balances, 169  
Ivanov\*, Kristo, (project A2psi on "Psychology and computers"), 6, 18, 24, 25 (intuition, Hilbert vs. Brouwer), 32 (love, idiot savant), 68 (vs. Jung), 81, 82, 92, 96, 97, 98 (psiA), (129) (precision), (105), 107, 110, 118-119 (love), 121, 123, 150,

162, **190** (convincing), 197, 216-217 (*idiot savant*), 215

Ivanov\*, Kristo, (project AVH on "Quality-accuracy"), 4, 6, 5, 9, 10, 15, 18, 20, 21, 22, 23, 26, 27, 29, 31, 32 (relevance), 33, 37, 39, 40, (46), 59, 60-61, 62-63, 65, 74-75, 77, 83-84-85, 86, 88!?, 95-96, 97-98-101, 103-104-105, 107, 109-110-111-113, 116, 118-120, 123, 131-132, 133, 135-136, 141, 147, 150, 153-154-155, 156, 159, 160-161,-162, 166, 167, 173-174, 175, 178, 186-187, 190-**193**-194, **199**, **201-202**, 211, 218, 225, 235 (replication, precision-accuracy), 239, 242, 253, 257, 265-266, 268, 272, 273, 277; convergence of search & truth, 175

Ivanov\*, Kristo, (project B&R on Belief & Reason), 4, 12, 24-25, 28, 34, 36, 40, 49, 96, 119, **121** (D'Arcy hierarchy spirit-knowledge), x163!, 172, 173 (love), 174, 176, 196, **200**, 203, 204-205

Ivanov\*, Kristo, (sub project A2M on "Method for project Psychology and Computers"), 85, 92!, 139 (mat), 154-155 (*Jung-A2psi*), 171-172-173, , 177 (J), 178 (J), (190), 197, 240-241, 243, 245

James, W., 164, 168, 238, 240; cf. pragmatism

judgement, 25, 27, 28, 101-102, 113, **175**, 193-194, 202; expert and design judgment, 99; expert judgment, 164; as reflective intuition, 107; as subjective belief, 114; as intensity of impression, 119; basis for, 101; ethical imperative mode of, 202; and design, **175**; by inquiring system, 192; of whole system, 193; cf. decision, intuition, measurement, deliberation

Jung, C.G., (105), 203-204, 205, 244, 261-262, 272, 277, 280, vs. 96, (171); value judgments, 102; type, 19, 36; psychological attitude, 105; contemporary marriage, 199; Jungian individuation process, 262; unconscious, (123), see innate ideas (vs. archetypes), myths, mood; cf. Hillman, (178, 203, 280); cf. collective unconscious, unconscious, hero, myth, individuation-uniqueness

just-in-time, 165-166; cf. inventory model

justice, 123; cf. law, democracy

Kant, 43-44, 70, 87, 106-107, 109-111, 147, 156, 158, 170, 172, 194, 242-243; vs. religion, 242; vs. Leibnizian IS, 144; transcendental dialectic, 170, 172; and Leibniz and Locke, 144; move from to Hegelian I.S., 265

kill maximizer, 93; cf. weapon, 73

killer application, (112)

kinematics, 128, 134-135, 137, 197; and arithmetic and geometry, 197

knowledge, 8-10, 12, 17, 25, 54, 55, 62, 95, 153-155, 189, 200, 203, 233, 276; intuitive, 25; practical, 5, 11, 13, 18; personal-tacit (cf. heuristic), 101-102, 107,

154; of reality, 204; of science, 200; and love, 203; knowledge engineering or elicitation, 82-84, 87, 93, 138; as value, 95, 200; value of, 203; as power, 200; as reality and action vs. illusion, 204; representation, 137; practical, 191; systematization of, 117; vs. politics, 112, 122; striving for, 267; cf. knowledge representation, data, information, tacit knowledge, knowledge management, wisdom, politics

knowledge management, 62, 74-75, 117; cf. navigation, inquiring systems (*passim* the whole book), knowledge, management

Kuhn-paradigm, (199)

labelling of inputs, 110, 117

laboratory accuracy, 198

labour unions (MBL-participation), 233

labyrinth, 144

Langefors, B., (THAIS & systems precedence analysis) 20, 24, 35, 38, 41, 45, 49, 51, 54-55, 63-64, 72-73, 77, 84, 96, 98, 101, 104, **105-106**, 118, 130, 134, 136, 139, **161**, (166), 171, 177, 186, 189, 191, **195**, 224, 236, 243, 249, 253, 256, 259, 270, 275 (ADB)

language, 102, 104-**105**, 107, 116, 123-125, (139), 142-143, **145**, 148-149, 171, 186, 189, 195, 201-202; language input, 105, 107, 123 (SAF); empirical, 125; common, **105**; of empiricism and inductive mood, 202; of learning, 201-202: of measurement, 186; of communication, 124; and action: cf. action; passage from is to ought, 103, 105, 115, 202; language games, (105); of doubt, 109, 114; of science, 102; metalanguage and object language, 161; linguistic forms, **145**; cf. communication, conversation, illocutory forces, perlocutory forces, dictionary

law, 74-75, 106, 108, 123, 175, 193, 198, 204, 256; penalty of, 161; law procedures, 106; as analysis of disagreements or politics, 193; and scientific law (Cranberg), 75, 198; and democracy, 123; cf. justice, democracy, Thomas A. Cowan

leadership, 196, 200; cf. management, decision maker, heroes

learning, 17, 56-57, 101, 108, 131, 145-146, 148-149, 173-176, 184, **201**, 228, 230-236, 268-269; learning (information system) vs. organizational activities, **56**; as generalization, **108**; objective, 149; as improvement, 153; meaning of, 131; dialectical, 180; as education, 267-268; as objectivity, (145); and experimenters, 235; and instruction, 103; and implementation, 235; in science, 228; in society, 228; computer's, 131; expression or language of, 201-202; as generalization, 108, 111; vs. tacit silent knowledge, 149; styles of learning or of inquiry, chaps. 2 to 10;

dynamic, 112; about reality, 146; and education, 159-160; as psychic development, 171; learning systems, 56; by experience, 131; cf. intelligence, knowledge, generalization, induction, flexibility, progress, cooperation, improvement, insight, reason vs. intellect, trial and error, education, experience, understanding, inquiry, sweep in, objectivity, debate, change, revision, generalization, solution, stooge

Lebenswelt; as living reality and conviction: cf. life world, phenomenology

legal, judicial structure, 123

legitimation, cf. authority, 163-164, 167

Leibnizian inquirers, 36, 62, 66, 69-72, 108, 145, 147, (164), 170, 176, 197; and Lockean, 230; and Kantian inquirers, 144; generalization of, 197; and Lockean inquirers, 36, 230; and faith, 242; and unconscious, 265; Leibnizian science, 39-40; Leibnizian formal systems, 30-32, 136

length, measure of, 152, 188

Lenin (Stalin), 253

levels, 11, 74, 76, 77, 91, 113-114, 153, 174, (204); of detail, refinement, 190, 192; of authority or hierarchy, 76; cf. meta-, hierarchy, organizational

liberalism, 4, 68; cf. pluralism, chap. (5) *passim*

libraries, 9, 11, 15, 61-62, 101, 117, 120-121, 128, 267; Alexandrian, 117; cf. data base, Internet

life, 157, 173, 249, 258; cf. biology, blood, phenomenology

life world, 171-2; cf. phenomenology

light velocity, 200

likeness, 101, 191; cf. identification, comparison, sameness, identification

limit (ideal), 257; cf. environment

limits, 73

Lindblom, C.E., 65-66, (228), 281

linear programming, 67

linearity; cf. logic, time, history, Leibnizian IS, vs. hypermedia

links; cf. networks, chap. (2)

literature, 170; cf. drama

living reality and conviction, 171-172

living systems, 39, 41

Locke, J., 154, 169, 180, 183; chap. 5, *passim*; Lockean IS vs. Leibnizian, 111, 116, 122, 230, 235, 242

Lockean, young investigator, example, 121  
log across the road example, information vs. action, 164; cf. rock on the road, 114-115; cf. radarscope speck, 124  
logic, 6, 13, 24, 29-30, 37, 60, 70, 81, 83, 85, 92, (94), 102-103, (105), 108, (110), 113, 123-124, 134, **145**, 160-**161**, 170, 192, 195, 198; symbolic, 6; reconstructed 195, 197-198, 215, 240; inductive, 123; as probability, 113; transcendental, 145; as sociology, 198; Hegelian, 70; predicate calculus, 108; beyond logic, 192; logical forms and classes, 108; inbuilt, 108; and contradiction, 70; cf. Leibnizian inquiring systems *passim*  
logical empiricism, cf. logical positivism  
logical positivism, 134; logical empiricism, 159-160, 166; as inductive logic, 123; cf. "positivism"  
logical reconstruction, 13, 195  
logical tests, 37  
love, 24, 28, (70), (119), (160), (169), 238, 243, 246, 255, 258, 264, 266 and knowledge, 203; as agreement, 119; as cooperation, **200**; cf. cooperation, enemy, trust, beauty  
machines, 23, 39, 43-45; cf. mechanism, technology  
macro, 44  
magic square, 142-143  
majority, vote, 105, 112; cf. democracy  
management information system, cf. system, Singerian IS, hypersystem  
management, 74, (148), 158, **163**, 181, 196, 200, 227; as self-consciousness and self-reflection, 158; as science, 74; and information, 163; and delegation of authority, **163**; fads, 92; of service, 185; and art, social science and physics, 93; and authority, 163-164, 167; cf. implementation, leadership, performance, metadesigner, self-consciousness, self-reflection, authority, control, cybernetics, knowledge management  
manufacturing, 53-54, 92-93, 166-167; cf. production  
market, as non-separability, 67, 133, 167; marketing as advertising, 167; cf. pluralism, sales, demand  
Mars, unmanned space laboratory on, 91  
marxism, 18, 91-92, 99!, 97 (=Riley), 119 (misunderstanding), 153, (174-175), 184 (participatory); cf. communism, Lenin, economics-politics-participation-implementation, MBL

Mason, R.O., 180-181, 184, 284  
master, and slave, 160; as servant, 168  
materialism; cf. reality  
mathematics, 26, 94, 112-113, 125, 136, 139-140, 142, 192, 195; mathematical logic, (197); arithmetic, logic  
matrices, 125; number 142  
maturation or "mognadsprocess", cf. evolution, improvement, learning, progress  
MBL medbestmmandelagen (participation act), cf. Hegelian IS, 159-177;  
implementation, politics  
Mead, G.H., (106)  
meaning, 9, 28, 30-31, 33, 70, 80, 95, 102, 104, **115**, 137, 140, 157-158, **161**, 174, **198**, 203; grounds for, 70; of experience, 70; teleological, 171; interpretive, (95); of variation, 193; as expression of information, 137; significant data, 84; creation of, see Weltanschauung; cf. understanding, learning, significance, interpretation, explanation, why, semantic, implementation, evaluation, reflection, intepretive approach  
means, 5, 45, 73, 140, 163, 256; means-ends distinction, 43-46, **269-271**; cf. tool, instrument, action, goal  
measurement, 112, 152, 186-205, 257; social, 187-190, 193; and observation, 110, 187; operational, 187; analysis of variance in, 193; a priori in, 194; authority of, 196; control of, 196; scale, 85-86, calibration of, 191-192; of length, 152, 188; infinite regress in, 188; in Kant's problem, 194; in a Lockean community, 187, 189; parsimony of (cf. sawmill), 196; partitioning in, 86, 192-193; of performance, 43, 47, 50, 80, 90, 189, 200; readings and replications, 190-192; of science, 200; and simplicity, 188; standards in, 186, **188**, 189; sweeping-in, 197; systems, 187-189; units in, 186-189; and utility, 189; of performance, 50-53, 188-189; physical vs. social, 187; economic, 189-190; arbitrariness of unit of, 189; value of, 190; as metric for weighing of end-products (expected value), 46; as readings, 191, 193; cf. data, instrument, quantification, classification, bias  
mechanics, 59, 132, 136, 197; Galilei's, 132; quantum, 197; cf. morphology, function, physical science  
mechanism, 132, 160-161, 168; as imagery, 209-210; mechanist information, 160; cf. structure, function, morphology, determinism  
meditation, cf. (prayer)  
medicine, 51, 223, 256

memory, 6, 100-101, 157; cf. data base  
mental models, 153-154, 156-161; mental states, 156-157; cf. representation, perspective, virtuality, model  
message, 118, 136, 144, 159-160; of information-data, 144; cf. information  
meta- (cf. levels), 17, 76, 153, 169, 183, 263; cf. hierarchy, metadesigner  
metadesigner, 148; as observer of the subject, 158; as perfect over-observer, 191, (193-194); as overviewer, 235; cf. self-consciousness, self-reflection, manager  
metalanguage, 161  
metaphor; 93-94, 141, **143**, 147-148; as biased mode of representation, 138-139, 141, cf. analogy  
metaphysical, 122; cf. ontology  
method, 5, **13**, 60-63, 72, 91-92, 113, 115-116, 132, 137, 143, 149, 152, 154, 171, 192, **195**, 274-275; scientific, 60-63, **113**, **115**, 154, **190-196**; vs. uniqueness, 205; and solution, 143; qualitative, 192-193; resistance to, 92, 171; observational-inductive, 115; of proof, (195); trendy, 92; vs. theory, 132; as input structure vs. theory, 137; critique of logical, 195; and science vs. politics, 60; resistance against the methodical, **92**; problematic, **143**; of measurement, 152; cf. science, scientific method, research, solution, logical reconstruction, replication, generalization; dialectics, ethnographic method  
metric, of expected value, 45-46; cf. measurement  
metrology, chap. (9), 186ff; cf. measurement  
Michaelson-Morley experiment, 135  
microbiology, 116  
military, intelligence, 97-98, 118-119, 124, 161; cf. strategy, tactics, executive intelligence  
Mill, J.S., 113  
Miller J.A. (general systems), 41  
mind, 6, 23, 39, 41, 87, **93**, 97, 150-151, 197, 261; reflective, 27, 155; state of mind, 156-157; absolute, 174, 178; constructive, 172-174, supreme objective 174, 176-177; collective, 70, 162, 194, 196; group mind, 68, 197; community of minds, 97; as brain, 161; psychic development of, 171; reality of or models of, 151; system as mind, 93; cf. introspection, absolute mind, intelligence-intellect, soul, brain, artificial intelligence  
minimal apriori, 125; cf. apriori  
mirage, 157; cf. virtual

MIS, cf. management information system  
mobile Internet (ubiquitous computing): representation in, 134-137; as adjustment of readings in time and space, 195-196; problems of identification and individuation, 37; as distance work, 13; cf. communication, inventory model, distributed intelligence, individuation, identification  
modalities of propositions, cf. moods  
modalities of thought, and of systems, 197-199; cf. disciplines, sweep-in, apperception  
model, 51, 133, **142-144**, 147-148, 165; model building, 147, 165-166; input model, 140, 142-143, 147-148; normative, 133, mental, 99, 103-106, 154, 156-161; cf. user model, mental model, system, simulation, image, perspective  
modernism; cf. progress, optimism, enlightenment, postmodernism  
modus tollens, 40  
mognad, cf. maturation  
molecular structure, in mass spectrometry, 81  
molecular biology, 197; cf. biology  
monad, Leibnizian, 30, 35-36, 39, 41, 75, 77, 93, (162), (168), 212  
monism, 67-68, 71; cf. pluralism, PPB  
monitoring; cf. control, management  
monkey brain (example), 23  
mother; archetype of the Great Mother, 244; cf. archetype  
mood or modalities of propositions (indicative, imperative, counterfactual conditional, interrogative), 102; cf. indicative, imperative  
mood, 173, 182, 202-204, 205; cf. attitude, feeling, hero, Jung, Hillman, indicative mood  
morality, 24, 200, 202; and expertise, 163; vs. benefit, 250; and design, 249; and information, 163; in Kant, 255; cf. ethics  
morphological class, 44, 214; cf. function  
mother; nature), 238; and quarreling sons example, 174  
motive, good reason, 181; cf. cause, teleology, goal-objective  
multidisciplinary research, 74; cf. interdisciplinarity, inquiring systems *passim*  
multimedia, cf. sensation, system, hypermedia, postmodernism, anti teleology, ateleology, Leibnizian IS, fact nets, hypermedia, hypertext, World Wide Web; as Lockean "five modes of sensation", 100  
multimodal inquiry, 196-198; systems thinking, 75-76; cf. sweeping-in,

transdisciplinarity, interdisciplinarity, apperception, aspects, perspectives; Herman Dooyeweerd, Donald De Raadt

multiperspective approach; cf. sweeping-in

mysticism, (58), 237, 249, 252, 265; cf. unconscious, intuition

myth, (96), 178, 203-204, 243-244, 245n; progress as, 178; cf. narrative, drama, epos, hero, Jung, fantasy, imagination

narrative, 32, 174-**177**-178, 180; as epic, 174, 176-178, 182, 270; as story telling, drama, 177-178; and accuracy, 178; vs. science, 178; as stories of the world, 32; cf. discourse, Weltanschauung, conversation, play, theater, epic, metaphor, myth, drama, Jung, story, postmodernism

NASA, National Aeronautics and Space Administration, viii-ix, 91; cf. space mission; Mars, and whole book, *passim*

natural image, 191, 194-195, 197-198; cf. Weltanschauung, world

nature, 238, 260, 268, 275, 276; natural science, 159, 209-212

navigation, in library (also as Internet analogy), 62, 117, 121; as visual recognition, 142; as input structuration, 142; as art, 93-94; cf. retrieval of information, space-time, representation, solution, knowledge management

need, vs. demand, 166-167; cf. purpose

negotiation, 174; vs. authorization, 196; cf. arbitrator, agreement, debate, bargaining, conflict, facilitator

network, 9, 104, 108, 111, 196; as network organization, **196**, 200 and cf. centralization, decentralization; cf. hypermedia, anti teleology, ateleology, tree, Leibnizian inquiring system (chap. 3 and fact nets), Internet, World-Wide-Web, actor network ANT

neural nets, as induction machines 26; 119, 156; as induction from observation, 87, 123-124; cf. Lockean IS, learning, intelligence, artificial intelligence

neuro-science, 75, 156-157

news, cf. attention

Newton, I., 204

Newton-syndrome, 19, 64, 69, 123

Newtonian mechanics, 136

node; cf. object (chap. 5), network (chap. 2)

nominalism, as conventionalism, 72

nomos, laws in Greek, 80

nonconventional, 119; cf. conventional

nonlinearity; cf. system, hypermedia, hypersystem, postmodernism, debate, browsing  
normal observer, 101; cf. competence  
normative models, vs. descriptive, **133**; ; cf. imperative mood, ought, is-ought, action,  
ethics  
notitia, cf. attention  
nourishment, cf. cookery  
nuclear physics, 116  
number matrices, 142  
numerical analysis, (140)  
object orientation, 149, 160, 166; as mechanical information, 159  
object, 11, 70, 72, 82, 104, 124, 131, 149, 160, 162, 192, 196, 255, (274); definition  
of, 109; as entity, 106; as identification-individuation, 128; vs. measurement of,  
191, 196; orientation, 106, 160; subject as, **150**, 156; object language, 161;  
teleological object: cf. implementation  
objectivity, 63, 70, 71, 114, 118-119, 125, 145-146, 149, 166, **157-158, 175**; and  
reality, 146, 158; of Lockean inquirers, 125; as design separability, 54; objective  
learning, 149; as agreement, 150; and debate, 162, **175**; cf. learning, absolute  
mind, truth, reality, otherness  
observation, 40, 60-61, 87, 96-97, 102, 110, 112-113, 115, 119, 122, 125, 138-139,  
146, 149-150, 153, 159, 166, 168, 189-**191**, 198; observational process, 97;  
design of, 119; what to observe and teleological information, 166; direct, 154;  
participant, 159-160, 184; accuracy of, 154; reporting of, 157; as a reading, 190-  
191; participant, 156; and adjustment of readings, 195; and hypotheses, **193-194**;  
directing an observation, 112-113; history of, 191; adjusting observations, 194-  
196, perfect observer, 111-112; and measurement, 110, 187; inference from, 87,  
152; independent, 191; cf. input, sensation, perception, attention, measurement,  
perfect observer; counter-instance, ethnographic method  
observer, 6, 40, 101, 106, 146, 150-151, 153, 159; as user, 156, independence of,  
191-192; of an observer, 146-147, 150-151, 158, 172, 235; representation, 159; as  
a synthesis, 173; perfect or normal, 40, 101, 111, 150-153, 159, 191; training of,  
198; neutral facilitator, 159; observed as an object, **150**; designer as, **150**; over-  
observer: cf. metadesigner, manager, aspect, perspective  
obsolescence, of inventory, 165; cf. (Swedish) lager inkurans  
obviousness, 98  
Ockham's razor, 72, 138

ontological transformations, as maximal apriori, 138-144  
ontology, 28, 34, 69, 76, **144-147**, **160**; ontological commitment or assumptions, 144-145, **191-192**; as existence, 69, 72, 76, 78; and epistemology, 76; in pragmatic sense, 78; essences, 28; ontological status of sense impressions, 72; in the improper sense of predication, (103); cf. reality, assumptions, essence, existence, interpretive, phenomenology, ontological transformations, virtuality, metaphysics  
operationism and operational definitions, (115), 153, 186-188  
operations research, 166  
operating system, cf. executive  
opinion poll, 170-171, 183-184  
opinion, 114, 154, 162, 184; opinion survey, 106, 184: cf. subjectivity, conviction  
opportunity cost, 165, 167-168, 170; cf. cost  
opposition, 173; cf. conflict  
oppression, 163; cf. alienation, power  
optical character recognition, OCR, 26  
optimism, 202; self-awareness, production-cooperation-progress, 178, 186  
optimization, 67, 94, 152; 171, 182; and satisficing, 51; as maximization of utility, 263; cf. satisfactoriness, improvisation  
ordering, 152, 155, 192; cf. ranking  
ordinality and cardinality, in measurement, 152; cf. preferences  
organism, 197; cf. biology  
organization, 72, 77, 97; theory, 72, 77; studies, 133, 170-171; and standard costs, 66; study of, 170-171; of knowledge, 97; and information system, **121**; social, 97; network or horizontal, **196**, 200; organizational behavior, 133; cf. system *passim*  
original, cf. individuation, uniqueness, replication  
otherness, 104, 151, 158, (161), 177; cf. uniqueness, objectivity, identification, diversity, difference, sameness, introspection  
ought, 52, 74, 133, 195, 201; and how-what, 195; cf. ethics, is-ought, imperative, normativity  
outliers, statistical, (111-112), 194  
output, vs. input, 137; cf. input  
outsourcing, 165-167  
overviewer, 235; cf. metadesigner  
owner, of problem, 146  
paradigm, 15, 39-40, 85, 111-113, 194, (198), 199; paradigmatic science, 39; cf.

culture, scientific paradigm as style of inquiry  
paradox 135; systems analysis', 217; 255; of teleological information, 164  
Pareto-optimality, 152  
parsimony, 72, 138, 196; design of, 134, 138; and economy, 124, 141; in  
    measurement (cf. sawmill), 196; in generalization, 84-90, 114; cf. simplicity,  
    economy, richness  
parsing, 20, 30, 34, 36, 81, 142-143, 147  
part, of system, 50, 56; cf. subsystem, component  
parti, such as basic general scheme of an architectural design, as generation of a  
    conviction, 171; as an apriori, 143; as hypothesis creation in design, 116; cf.  
    reflective intuition, imagination, design  
participation, 196, 201, **250**; and hierarchy, **77**; participant observation, 159-160, 184;  
    lack of, 159; cf. MBL, dialectics, democracy, implementation, cooperation, politics  
particular, vs. the general: cf. implementation, action, situated action; cf.  
    generalization, judgment  
partitioning, 85-87, 112, 175, 190, 192-**194**; cf. precision, interpolation, disagreement  
passion, 171-173; cf. conviction  
past-future, 110, 153, 160, 166; history, 166; unchangeability of, 160; cf. history,  
    forecast, prediction, time  
past generations, 160-161, 201; cf. history, time  
path, 140  
pattern, 5, 27, 26, 100, 123-124, 126, 138-140, 150, 173; recognition, 94, 100, 124-  
    125, 140, 142, 150; cf. image, optical character recognition  
peace, 71, 173-174, (188); cf. cooperation, conflict  
peer review, 15, 35, 101ff, **162**, 221; hearings, 272; as collective subjectivity **58-59**; cf.  
    expert, agreement, consensus  
Peirce, C.S., (187), cf. pragmatism  
perception, 26, 30, 75, 103, 112, 123, 138-139, 142, 144, 155; selective, 171; as  
    interpretation of sensation, 194; vs. sensation, 125; cf. sensation, observation  
perfect observer, 40, 111-112, 150-153, 159, 191; cf. observer, politics of science  
perfection, 73; cf. quality, completeness  
performance, 91; of standard, 188-189; cf. measurement, purpose, function and  
    functionality, evaluation, cost-benefit  
perlocutory forces; cf. pragmatism  
personal knowledge, 150-151, 153-154, 173; cf. tacit knowledge, silent knowledge,

community knowledge  
perspective, 75, 111, 118, 125-127, 139, 142-144, **149**, 153, 155, 158-159, 168-169, 170-172, **174**, 175-177, 183, 194, 198; teleological, 168; narrow or broad, 174; as state of mind, 156-159; transperspectivism, 75; as psychological attitude, 105; as ways of looking, 159; as conviction, 172; as structuration of inputs, **142**; vs. truth, 143-144; and world-view or natural image, 194, 196; as apperception, 73-75; as input strategy of an a priori, 137-145; as Singerian natural image, 191, **194**; ; as imageries of nature, 191, 194-195, 209-212; cf. aspect, Weltanschauung, apriori, apperception, (point of) view, observation, model, (Kantian) representation, impression, interpretation, opinion, system  
PERT program evaluation and review technique, and CPM critical path method, as project management, 92-93  
phenomenal-phenomenology (cf. ateleology), 139, 151, 157, 158; phenomenal world, 138-139  
phenomenological approach, **144-145**, 151, 153-**155**, **158**-159, 177, 257; and truth, 257; cf. interpretive approach, hermeneutics, Lebenswelt  
phenomenon, 139; cf. event, observation, reality  
philosophy, of science and language, 195; and *passim*  
photographical plate, scratches on (example), 137  
psychic development, 170-171  
physical science, 116, 137, 192, 197-198, 210; and art, management and social science, 93; geometries of physicists, 137; physic's data, 137; cf. Newton, Galilei, Newtonian mechanics, relativity theory  
Piaget, J., 102  
picture, 20, 151; of alternative actions or Weltanschauung, 169; rich picture, 71-72; cf. image, vision, pattern  
planner, cf. designer  
planning, 48, 67, 74, 77; dialectic, 180; difficulty of, and design, 153; cf. design, management, hierarchy  
Plato, 18, 36, 41n, 67, 78, (139); on memory and recognition, (101); and pre-Socratic 41; Platonism, 41n  
plausibility, 171  
play, 125, 138-139, 203-204, 235, 241, 254; cf. drama, gambling, game, humor, narrative, epic, myth  
pluralism, 25, 68, 71-73, 78, 92-93, 105, 111; as plurality, 105; and diversity, 204;

cf. agreement, democracy, monism, pluralism, relativism, liberalism, values, actor network, polytheism, postmodernism, chap (5) and chap. (7) *passim*

Poincar, 28

point of view, 75; cf. perspective

policy, of research, 122; cf. strategy

political science, 59-60

politics, 58-60, 68-78 esp. 74, 106, 119-120, 122-123, **172-173**, 184-185, **193-194**, 200, 217, 220, **222-225**; 270; and scientific method, **60-61**; and subjectivity, **120**; and information, 122; vs. knowledge or science, 112, 122, 247; as analysis of disagreement, **193**; and implementation, 66, 233; and the state, 204; inquiry of, 58-59, 217, 247; as myths, 96; as incrementalism, 66; political consciousness, 184-185; of research or science, 88, **122**, 180-181; of science, 58-59, 111, 122, 180-181, **193-194**; and cost of empirical research, **120**; cf. agreement, disagreement, general will, pluralism, democracy, power, cooperation, conflict

pollution, 144, 202; cf. ecology

Polya, 28

polytheism, 73

Popper, K., (136), (199); cf. validation, error

popular science, **8**, **271**

positivism, 51, 60-61, 81, 102, 108, 110, 114-115, 119-120, 122-123, 125, 129, 132-134, 142, 145-146; 160-161, 164, 195, 197-198; logical, 134, 160, 195; in evolutionary development, 63; as inductive logic, 110, 123; logical, 159; cf. agreement, conventional, logical positivism, database

possibility, 161

postmodernism, 32, (36), 40, 49, 68, (71), (95), (168), 170, (177), 178, 187, 189, (196), **203-204**, 217, 276; as progress-process, 40-41, 203-205; as anti thinking, 177-178, 255; as subjectivism, 153; as process, **203-204**; cf. anti-thinking, anti teleology, anti-planning, ateleology, romanticism, pluralism, antinomy, relativism, skepticism, subjectivity hypermedia, multimedia, progress vs. process, sensation (as surrogate of feeling), feeling, unconscious, narrative or epic

poverty, 144, 178, 181-182

power, 6, 58-59, 68, 73, 112, 119-120, 160-161, 185, 196, 216-217, 219ff, 232-236; as enabling value, 200; as value and ethics 73, 200; of a central agency, 68; as cooperation, 200; as centralization, 68; veto power, 111-112; cf. politics, cooperation, agreement, oppression, alienation, monism, pluralism, democracy,

authority, responsibility  
PPB (program planning and budgeting), 67, 92-93, 226; cf. systems planning,  
monism, strategic-tactical  
practice, 13, 166-167, 225; community of, 167; practice-praxis, 171; practical  
knowledge, 191; work practice, **166**; cf. reality, pragmatism, empiricism  
practitioner, reflective, 155; cf. implementation, practice  
praxis, 166  
pragmatism, 11, 120-122, **168**, 225; as making a difference, 164; in research politics,  
122; cf. Dewey, J., James, W.  
prayer, 243; cf. religion, faith  
precedence (cf. Langefors), 134  
precision, 175, 196; as refinement, 86, 190-191, 196; cf. accuracy, partitioning,  
Ivanov (project AVH quality)  
predicate calculus, 108  
predication, 86, 103-106, 201  
prediction, 110, 131, 153, 165; cf. forecast, regularity, causality, purpose  
preferences, 152, 155; cf. ranking  
prejudice, 159; cf. apriori  
preparedness, 170  
presuppositions, 110, 124, 131, 133, 141, 184, 190; background presuppositions,  
125; cf. assumptions, a priori  
primitives, vs. logic, 198  
price, 67  
pricing, and advertising, 167  
priority, of purposes, 73  
privacy, 123, 151, 155, **161**, (162), 173, 178, (220); cf. Ivanov (project SAF)  
private knowledge, cf. personal knowledge  
probability 32, 45, 105, 108-109, **113**, 153, 201, 211, 214, 252; subjective vs.  
objective, 153; cf. risk, uncertainty, random, statistics, and logic of  
problem, **146**; social 181; and the a priori, 138; of representation, 125; formulation,  
146, 171, 195; solution, 138, 146, 254; solving machines, 38-39; problem owner,  
146; cf. representation, learning, input, solution, method  
process; endless, 199; vs. progress, 203-205; inner, 107; cf. change, action, function,  
progress, postmodernism, ateleology, anti teleology  
producer-product, 8, 44-46, 51; potential, 44-45, 4; inquiry as production, 141

product, vs. service, 185  
production, industrial manufacturing, 53-54; cf. manufacturing  
production, inquiry as, 141  
production-science-cooperation trilogy, 202; and progress, 203  
productivity, 137; cf. efficiency, effectiveness, parsimony, measure of performance  
professions, 74  
professors and dissenting students (example), 199  
profit, 124, 167; cf. cost and benefit, measure of performance  
program 6, 103, 126; as a system, 90-91, as Leibnizian processors, 30-32; as project management, 92-93; as instruction, 103, **115**; vs. database, 202; and data 102-103; cf. PPB, imperative, is-ought  
progress, 39-40, 153, 175-178-179, 186-205, 201-204, 229, 245, 248, 254; measure of, 189; defined as client, decision maker, and designer are the same, 201; in monism, 71; as myth, 178; vs. process, 203-204; progression of sciences, 39, 198; as adjustment of changing object, 196; as revolution of counter-theories, **199**; non-linear, 202-203; cf. absolute mind, optimism, change, postmodernism, learning  
project management, 92-93; cf. PPB, PERT  
proof, 195; vs. discovery, 195; cf. validity, verification  
property, 78, 99-100, 108; maximum, 34, 73; of object, 150; cf. attribute, predicate, partitioning  
prototype, cf. simulation, hypothesis, thesis, test, model, grov bild - coarse picture, vs. skarp milj  
psi, stands for psychology  
psychic development, 171  
psychoanalytic knowledge, (97), 155  
psychology (psi), 75, 103, 133, 155-157, 160, 197, 204-205; as attitude, 105; and religion, 265; cf. mind, sensation, perception, emotion, feeling, conscious, unconscious  
Ptolemaic theory, 196; cf. Copernican revolution, astronomy, apriori  
public 176-177, 180-183; well-informed citizen, 176-177, 269; as community knowledge, 154; cf. democracy  
public opinion, 162-163, 176  
purpose, 5, 46-47, 69, 71, 73, 88, 163, (171), 214, 226, 246, 250; cf. teleology, end, goals, objectives, will, desire  
puzzle, 139, 143; cf. problem, solution

qualitative method, 113, 115, **120-121**, **138**, **152**, 192-193, 255; as empiricism, 113-114; vs. quantitative, **152**; cf. ethnographic studies, measurement, quality, quantification, descriptive, interviews

quality, 12, 65, 73, 146, (165), 192-194, 266; as value, 190; (total) quality control, 65, 165, 193-196; as reliability of data, 10, 84; cf. total quality management, evaluation, improvement, learning, evaluation, quantity, tolerance, satisfactoriness, perfection, completeness

quantification, quantitative method, 112-113, 192-193; cf. measurement

quantum mechanics, 197; cf. physical science

questioning, 87; cf. explanation, interpretation, understanding, why, interview

qui custodiet custodium, 135; cf. watchdog

radarscope, speck on, 124

rain today (example) 31-32

random, 120, 199, 211, 252-253; cf. probability, statistics

ranking, 46; of entities, 73; of preferences, 152; cf. ordering; net ranking

rational (cf. reason), 62-64, 69, 96, 170, 256, 258, 260

rationale, cf. evidence, commitment, explanation, understanding, proof

rationalism, 40-41, 70, 96

rationality; and reality, 176-177; cf. inquiry *passim*, reason, truth, Weltanschauung, perspective, aspect, privacy, public, pluralism, personal knowledge

raw data, 99, 137; cf. basic data

reaction, 43-46, 118, 159, 164, 168; cf. stimulus, action, response, interaction

reaction-response, 159, 168; cf. action-activity

reaction-time, of observers, 197; cf. Bessel

reactionary, 17, 173, 204; cf. conservative

readings, 191, 193; cf. measurement

real, realism, and ideal-idealism, 19, 35, **178**, 199; common sense, 19

reality, 13, 41, 68-69, 72, 76, 78, 90, (96), 97-98, **122-123**, 128, **139**, **146**, **148**, 151, 157-**158-160**, 175, 178, 183-184, 186, 189-190-**191**, **196**, **199**, **204**; social, 183; as agreement, 191; as correspondence, 160; representation of, 176; of knowledge, 204; of inputs, 123; three images-visions, 213; of whole systems, 68-69, 76; living reality, intervention and participation in, 171-172, 183; database as image of, 160; as ontological commitment, 191; as realistic problem solving, 143; of the mind, 151; vs. illusion, 204; cf. truth, ontology, objectivity, Weltanschauung, virtuality, virtual reality, empiricism

reason, unconstrained, 170, 172; good reason or motive, 181; cf. thinking  
reception of information, 100, 106-107, 128; cf. input, data collection  
receptivity, 145  
recognition, 101-102, 107, 125, 138, **145**; cf. reflection, cognition  
recurrence-recursivity (cf. infinite regress, vicious circle, self-reference), 178, 188  
recursive, 25, 169, 199; as infinite regress, 168, 178, 188; as endless process, 199; in  
experiments, 132, 135; recursive property of intuition, 25; cf. regression, vicious  
circle  
redefining of terms (cf. translation), 105  
reductio ad absurdum, 136  
reductionism, 75, 161  
redundancy, 161  
reengineering, workflow, 14, **52**, **124**, 141, 165-**167**, 174; as revision of apriori, 194-  
195; as management fad, 92-93; cf. coconstruction, evolution; redesign, 247; as  
system reconstruction, 67; cf. downsizing, change, incrementalism, cost reduction,  
action, activity, revision, management information systems MIS  
refinement, 87, 190, 191, **192**; cf. partitioning, detail, precision, accuracy, reliability,  
rough picture, grov bild, approximation, classification  
reflection, 17, 22, 28, 30, 100, 107, (112), 148, 155, 238; a priori, 129; in Lockean IS,  
100, 107; self-reflection, 158; reflective intuition, 107; in action, 155; cf. self-  
examination, self-reflection, meaning, trial and error  
reflective practitioner, 155; cf. self-reflection, management, action, separability; cf.  
Schn, D.  
refutation, 149; cf. confirmation, doubt  
region, cf. subsystem parts or components in chap. 3  
regularity, 110; cf. replication, forecast, causality  
relation, 50  
relational logic, 34; cf. entity relationship  
relativism, (95), 136, (144)-145, (196), **203-204**; against relativism, 174, 276; cf.  
postmodernism, perspectives, aspects, virtuality, anti-thinking  
relativity, special theory of, 136  
relevance, 32, 84-85, 88, 98, 125-126, 138, 142, 165, 167, 171-172, 175; of  
information, 171; of input, 142; cf. attention, accuracy  
reliability of data or information, 84, 97, 109, 113, 156, 160, 162; cf. accuracy,  
precision, quality, credibility

religion, 34, (40), vs. 70, 96, 98, 155, 163, 171, 172, 174, 176-177, 205, 237-238, 244, 249, 251; and theodicy, 36; and inquiring system, 264; and psychology, 265; and authority, 196; imagery of, 243; of inquiring systems, 237-246; and science, 219, **229**, 237, 239; cf. God, Church, ethics, theology, hope, faith, trust, guarantor

repertoire, of patterns, 140, 169; of responses, 197; of experience, 170; as catalogue of opportunities, 197-198; cf. system, resources, database, classification, types, archetypes, metaphors

repetition, cf. replication

replication, 154, 132, 190-192, 198-199, 235, 255; of observations, 85; cf. precision, experiment, method, regularity, forecast, (duplication)

reporting, of observations, 157; cf. data collection

repository, of information; cf. data base, memory

representation, 116, 125-127, 139, 158-160, chap. 6, *passim*; mode of, 156-157; cf. mental model, reality, perspective

requirements, demand, 167

research & development - R&D, 263; dialectics of, 180-184, process, 83, 60-61, 64, 180-181

research, 60-62, 90-91, 190-202; system politics of, 58-59, 122, 180, basic, 244; as an exploitative term, 221; and God, 244; interdisciplinary, 198; management of, 74; pure, 120; as a system, 60, 90; automation of, 115-116; and development R&D, 180; design of, 91; method of, 91-92, 116; policy or design, 91; cf. science, learning, scientific method, politics policy

researcher, young, 121; cf. research, science, designer, planner

resources, 43, 47-48; resource allocation, 67, 156; resources preferences; cf. cost, input, effectiveness

response-reaction, 157, 159, 164, 168; cf. activity, action, reaction, interactivity, stimulus

response repertoire, 156-157, **170**; cf. chap. (2) on fact nets, chap. (3) functional and teleological classes, action, stimulus, teleology

responsibility, 63; cf. autonomy, power

responsiveness, cf. action-response, Hegelian IS, commitment, vs. alienation

restlessness, 199-200; cf. contentment, hero, don Juan syndrome, contentment, postmodernism, relativism

retrieval, 121; cf. navigation, data base

reverse engineering, (171)

revision, **194**, 199; as adjustment, 196; cf. change  
revolution, 173, 182, 204; cf. change, reactionary  
rhetoric, (182-184); cf. aesthetics, drama, narrative, conversation, agreement,  
conviction  
rich; data, 142; description, of data 120, 138, 140; representation of data, 126, 138,  
141; design, 143, communication, 122; analogy, 143; of information, **138**  
rich analogy, **143**; cf. metaphor  
richness, of information as comprehensiveness of picture, **138**; of representation, **141**  
rich solution, 72, 98, 146; synthesis, 182; representation, 141; information, 98;  
experience, 170; cf. parsimony, minimal vs maximal apriori  
right feeling, (155); cf. feeling, conviction, aesthetics, romanticism  
risk, 124; and uncertainty, 153; cf. probability, doubt, uncertainty  
Rittel, H., 180n  
rock on the road example, 114-115  
role; cf. actor, designer, planner, decision-maker, client, human dimension, social  
Romanticism, 151, (153), 155, 158, (159), 170-**171**; 173, 177-178; as anti teleology of  
the designer, 249; as neo-romanticism, (203); source of in Kant, 170; as primacy  
of the subjective, 151, as action life vs. grey theory, 204; cf. aesthetics, intuition,  
feeling, anti teleology, ateleology, feeling, subjectivism  
Rousseau, J-J., cf. general will  
rules, 22-23, 125-126; of games, 138, 204; rules generating system, 187; no rules,  
204; application of partitioning rule, 193; cf. norms, values  
rumour spread, 92  
sacrifice, 250  
SAF; cf. Ivanov, project SAF  
sailing example, and smaller mind, 11  
Saint Thomas, of Aquinas, 18  
sale, 133, 184-185; sales statistics forecast, 133; demand, 166; cf. market  
same-another, 101, 151; cf. individuation, identification, likeness  
sample estimate, 124  
sampling, 85, 88, 111, 124; stratified, (197); statistical vs. complete count, 85; and  
completeness of empirical inquiry, 120, 124; cf. statistics  
SAP, as management fad, 93-93; cf. management information systems MIS  
satisfactoriness, satisficing, 24, 51, 64-65, 80-82, 90, 111, 121, 124, 140, 146, 161,  
167, 176, 189, 191, **199**, 202, 211, 253; as degree of confirmation, 80; as

complacency, 199; cf. accuracy, optimization, solution, measure of performance, simplicity, tolerance, understanding, politics, negotiation, improvisation, optimization

savings, and costs, 124,

sawmill example, 166- 167, 187, 189; as simplicity of measurement, 196; cf. generalization, parsimony

scalar quantity, 86

scenarios, cf. vision, image, simulation, narrative, hypothesis, thesis

schema, 80

Schn, D., (155); cf. reflection, self-reflection, action, pragmatism, Dewey, design, trial and error, ateleology, anti teleology

science, 10, 39, **60**, 74-75, 80, 91, 105, 149, 154, 158-159, 192, 195, 197-198, 203, 219, 224 (intern.), 225, 273; political and social aspects of, 122; politics of, and philosophy or sociology, 58-59, **193-194**; hierarchy or progression of sciences, 197-198; biological social humanistic behavioral, 210; and religion, 219; as story telling or narrative, 178; language of, 102; scientific method, 154; esoteric vs. exoteric, 60; formal, 129; cf. method, replication, research

scientific communication, 61; research method

scientific management, 74

scientific method, 13, 72, 85, 112, 116, 154, **195**, 268; as design system and politics, **58-61**; cf. method, objectivity, explanation, validation, research, ethnographic method, qualitative method

scientism, 60

scratches on photographic plate (example), 137

Searle, cf. action language

search, "engines", 101

security, 73, 161, 173, 204; as watchdog, 150; of data, **161**; cf. guarantor, secrecy, control, watchdog

self, 151; and fact as alienation of, **161**; cf. interpretive, dialectic

self-analysis, 129, 249, 265

self-consciousness; (129), 151, 158, 186, 194, 213, 236, 241, 243, 249; in agreement, 194; cf. consciousness, autopoiesis

self.-contradiction, 31; cf. contradiction

self-control, 196

self-deception, cf. illusion

self-examination, 107; of an apriori, 129; cf. (self)-reflection  
self-knowledge, 204  
self-reflection, (129), 158, (168), 175; self-reflective paradox, 148; cf. reflection, self-consciousness, self-examination, self-analysis  
semantics, 9, 10, 21, 30-31, 33, 102, 123, 144-145, 159-**161**; cf. meaning, object, language, communication, connotation or intension, denotation or extension, semiotics, pragmatics and syntax  
semiotics, 159-160; logical syntax vs object semantics vs. use pragmatics, as syntax cf. chap. 2, semantics cf. chap. 5, pragmatics cf. chap. 7; cf. semantics, object, meaning, individuation, pragmatism, symbol, observer  
sensation, 97, 99-100, 102-103, 105, 119, 128, 131-132, 138-139, 151, 153-155, 158, 194, 261-263, 265; subjective, 152; vs. perception, 125; intensity of, 152; as surrogate of feeling (cf. hypermedia), 264-265; cf. perception, feeling, postmodernism, anti teleology, ateleology  
sense; cf. sensation, meaning, understanding, argumentation, conviction, semantics, design, dialectics (chap. 7); sense data, immediacy of, 155  
sensuous intuition, 106, 131, 144-145, 158, 170; vs. cognition, 145; sensuous inputs, 170; cf. perception, sensation, observation, data  
separability, 111, 114, 120, 122, 133, 145-146, 164-165, 167, 177, 224, 270-271; of observational subsystems, 110, 122-123; of apriori problems, 130; of designer, **146**; cf. components, system, subsystems, hierarchy  
service management, 185  
set theory, Boolean algebra, 192  
sex, 266; cf. love, feelings, biology  
shame, 264  
Shannon, C., (161)  
shift-and-drift or function-creep, 5, 14, 45-46, 51-52, **63**, **65**, 83, 93, 153, 203, **205**; as a function of the designer, **150**; cf. function creep, evolution, trial and error, change, adaptive systems, flexibility, implementation, sweeping-in, ateleology, situated action, improvisation, bricolage  
significance, of data, 84; level, 112; of variation, 193; cf. meaning, relevance  
silent knowledge, cf. personal knowledge, tacit knowledge  
Simmons, R.F., 26, (71), 281  
Simon, H.A., (46), 65, 80, 83, 95-96, 139-140, 153, (176), 253  
simplicity, 19-20, 21, 24-25, 29, 37, 72, 96, 99ff, 103-105, 108, 113, 133, 136, 137-

**140**, 141; and clarity, 24; and the a priori, 137; design of, 99; in design, 78; of formal theory, 96; and generalization, 127; of inputs, 97; in measurement, 188; of observation, 96; simple systems, 78; as parsimony vs. economy or effectiveness, 138, 141; economic value of, 138-139; cf. clarity-clearness, parsimony, complexity simulation, 142; cf. virtual reality, reality, measurement, virtual

Singer, Jr., E.A., viii, 44, 46, 83, 85-86, 105, **119**, (144), 146, 175, 178, 186, **199**, **230**, 281; vs. Leibniz, 197-198

SIS/RAS, 83, 89, 92, 93, 120-121

situated action, 5; as situational knowledge, 11; implying a metric to weigh the end-products of outcomes, 46; why, **153**; in context, see systems; cf. action, function (functional and teleological classes), Weltanschauung, implementation, shift-and-drift, improvisation, bricolage

skarp milj, 192; cf. test, reality, hypothesis, thesis, simulation, picture, prototype, coarse picture

skepticism, 131-132, 134, 152-153; cf. doubt, improvisation, postmodernism, relativism, Hume

sketching, 20

so-what, 164, 166, 172-173; cf. why-not

social, 5, 8, 14, 97, 101, 104-105, 107, 118, 187, 193; and economics, 124; problems, 181; social science, 151, 181, social measurement, 189-190

social actor, cf. (teleological) entity, (sub) system, action, teleology

social organization, 97; cf. system

social science, 68; and art, management and physica, 93

socialism, and fascism, 68

sociology, 120, 197; logic as, 198; of science, 193

Socratic (pre-), 41 (Anaxagoras)

software, cf. program; software packages, 116, 118

solipsism, 105, 150-151, 153; cf. Berkeley

solution, 81, 139-143; **146**-148, 150-151, **185**, 195, 230-236; and computer, 197; problematic, **143**; impossible in real systems, 143; cf. method, satisfactoriness, problem, stooge, learning

soul, (204); cf. mind

source, of data, 153

space mission, NASA, 91; space probes 116

space-time, see time-space

specialization, 123, 124-125, 176; cf. expert  
spectacles, example, 142  
spectrometer, 81ff, 116  
speculation, 18; cf. reflection  
speech acts; cf. action language, ought, is-ought, illocutory forces, perlocutory, imperative, (Austin), (Searle), Habermas  
Spinoza, 25, 69, 71-72, 77  
spirituality, (204); cf. religion, God, values, ethics, culture, emotions, intuition, intelligence, mood, conviction, individual, mind, knowledge, creativity; vs. reality, anti thinking  
stability, 191, 196; cf. change  
standard deviation, 200n  
standards, 6, 11, 40, 112, 110, 186-189, 195-196, 198; as convention, 114; adjustment, **196**; as apriori or mode of receiving information, 137; cf. measurement, calibration  
standpoint, cf. aspect, viewpoint, attitude, perspective  
state government, and politics, 204; cf. politics  
states, of nature , cf. morphological classes, 159, 166; of mind, 99-103, 118-119, 151, 153  
statistics, 6, (32), 37, (61), 65, (74), (80), 84-86, 90-93, 105, 109, 110-**113**-116, 120, 124, 132-133, 134, 153, **161**, 183, 188, 192-193, 197, 211-212, **235**, 238; likelihood ration, 90; and variances in standard costs, 66; misuse of, 112; outliers in, 111-112; measures of confidence, 111; regression or least mean squares analysis, 112; sample estimate, 120, 124; statistical experiment, 183-184, **192-194**; statistical variance, 193; computerized, 112; statistical inference, 92; statistical method, 132; statistical correlation vs. causality, 131; standard deviation, 200n; cf. language of doubt, hypothesis testing, probability, uncertainty, sampling  
stewardship, cf. adaptative, evolution, learning, revision, reengineering, change  
stimulus, -response, 97, 102, 151, 154, 156-157, 159, 163-164, 168; cf. reaction, input-output, black box  
stochastic, cf. random  
stock, cf. inventory  
stock market, 212  
stooge, example and experience of implementation in education, 230-236  
story telling, 178, 180, **270-271**; cf. narrative

strategy, 87, 139-140, 171, 192-**196**, 202; vs. tactics of science, 195-196; strategy, 183-185; strategic I.S., 170-171; strategy vs. authority, 196; and agreement, 105; cf. ideals, tactics

stratified sampling, (197)

structure, 45; of information or data, 137; tree structure, 144; cf. morphology, mechanism, determinism

styles, 170, 266; repertoire of, 177; as form of individual expression, 267-268; styles of inquiry, chaps. 2 to 10; cf. repertoire, paradigm, aesthetics, culture

subject, 106; -object, 158; cf. inquirer, entity, object

subjective probability, 114

subjectivism and subjectivity, (58), 63, 107, 114-115, 119-**120**, 151-159, 177, (196), 203-204; intersubjectivity, 149; subjective sensation, 152; in design, 63; collective, 58; subjective belief as judgment, 114; of tastes, 266; cf. objectivity, perspectives, relativism, postmodernism, romanticism, solipsism

substance, 69, 77, 106

subsystems, components, 7-8, 43, 49-60, 67, 77-78, 167; cf. part, component, unit, separability

success, 47, 85, and failure, 139; cf. evaluation, measure of performance, cost-benefit, ethics, failure

summaries, of inquiring systems, 20-21, 37, 70, 95 chaps. (5)-(10), 111, 118-119, 144, 176-177, 194, 197, 243; Leibnizian and Lockean compared, 111, 116; Lockean and Kantian apriori compared, 134; Kant, Leibniz and Locke, 144; this book

supersonic transport SST, 229

support, 4, 6, 13-16; computer support, 115, 116; cf. tool, (co)-producer, change, cooperation

supreme objective mind, 174, 176-177; cf. God

survival-reproduction, 210

sustainability, cf. guarantor

swans, example, 108-109, 111, (123-124)

sweeping -in, 131, 146, 170, 175, 197, 199, 215-216, 253-254, 256-257; as apperception, 75-76; cf. **chap. 9 passim**, perspective, aspect, conversation, agreement, conflict, apperception

symbol, 20-21, 30, 171; sequence of, 143; cf. icon, image, sign

symbolic interactionism, (106); cf. Mead G.H.

symmetry, 139

synaesthesia, 100-102, 106, 118-119; cf. chap. (5), virtuality

synthesis, 32, 175, 177; cf. system, agreement,

system, 7, 39-41, **42ff** *passim*; **43**, 167-168, **174-175**, **195**, **198**, 200, 202; definition, 7; as data, 168; size of, 56, 58; systems development, 120; as integration of knowledge, 94; as comprehensive picture from givens, 145; whole system, 71; vs. drama, 178; larger system and components or subsystems of, 167; Singerian conception of, 195, **198**; system idea, 41; systems theory, chap. (3) *passim*; cf. general systems theory, subsystem, component, part, environment, whole, context, narrative, drama, interdisciplinarity, design, synthesis

system insight, cf. learning, improvement, understanding, reason vs. intellect, intuition

systems philosopher; 68; cf. metadesigner

table or desk, example in measurement, 187

tabula rasa, Lockean "blank tablet", 99-100

tacit knowledge, 18, 21, 25-28, 28, 36, 81, 82-84, 87, 92, 138, 145, 150-153, 175, 177, 178; in agreement, 194; and knowledge engineering, 83, 87, 88-89-90, 92, 101-102, 107, 116, 118, 137-138-139, **145**, 150-153 (Julian Hilton), 154-155, 158; expert, 162; as love-conviction, 171; personal vs. communicative, 173; vs. learning, 149; explicit alternative design; drama-theater, 256-257; and unique element in decision, 256; everybody's 268-269; as direct vs. inferential observation, 153; cf. personal knowledge, public or community knowledge, expert, heuristics, personal knowledge, silent knowledge, intuition, unconscious

tactics, vs. strategy, 192, **195-196**

taste, 24, 266; subjectivity of, 266; cf. style, aesthetics

tautology, 4, 23, 29, 31, 33, 37, 116, 108, **160-161**

taxation, and obsolescence or deterioration, 166

taxonomy, 108, 159, 186-187, **192**; as distinctions, 270; as dichotomic classification, 159; cf. classification, coding, definition

technique: cf. method, technology

technology, 7, 15, 23, (41), **44-46**, 200; and effectiveness, 202-203; information technology: as computer; as machines, 23; use of, 46; applied, 58; innovation and exploration of, 193, **199**; exploration or exploitation as observed by designers, 150; drifting in its use: cf. shift-and-drift; as conscious attempt to change: cf. design, p. vii et al; as resource and transformation function: cf. innovation, action-activity-production, efficiency, productivity, function vs. morphology, economy; as power-

potential: power, knowledge, progress, production; as change of implication fact-  
nets, cf. chaps. (2) and (7) *passim*

teleology, 39, 45, 69, 159, (160), 163, 168, 210-211, 213, 215, 246; as cost-benefit,  
163; of information, 165; cf. purpose, end, function, will, vs. ateleology, anti  
teleology, anti-thinking, relativism, pluralism

terrorism, and war, 162-163, **270**; ; terrorist mind, 173-174

test, 109, 136, 149; crucial, 136; hypothesis testing, **192**, 196-197; of instrument, 83;  
of expertise, 163; neurological or psychological, 156; related to hypothesis, see  
hypothesis; cf. control, validity or validation, sharp test (Swedish: skarpa miljer)

textualization-context, cf. system

Thais, Theoretical Analysis of Information Systems, cf. Langefors

theater, 178; inquiry as, 203; ref. Julian Hilton; cf. drama, epic, myth, narrative, play

theology, 24, 33, 36, 40, 68!, 70, 74, 76, cf. God, religion, ethics, morals

theorems, and axioms, 136, 142; cf. axiom, generalization

theory, 39, 87, 132-133; and input, 137; vs data, 32-33, vs. observation, 87;  
theoretical base for certification, 188; cf. model, conceptual frame

Theseus, 204; cf. hero

thesis, 171-177; cf. hypothesis, dialectics

thinking, 127, 131, 134, 259-260; cf. inquiry, design, reason

this book, *vii*, 4, 9, 16-18, 20, 23, 27, (37), 41, 42, 43, 63, 79, 111, 176-177, 180,  
(203), (205), 230, 258-259, 274-276

ticktacktoe, example, 125; game of, 142

time, 15, 160-161, 176, 197; time savings, 81, 91; cf. clock, past, space-time, history,  
future

time-space, 37, 40, 106-107, 110, 131, 149, 194; cf. geographical information system  
GIS

tolerance, 193, 191, 201; as agreement within a range, 113; cf. satisfactoriness

tool, 83, 86; cf. means, instrument

Toulmin, S.; cf warrant

toothache example, 151-152

topology, 94

total quality management - TQM, 165; cf. quality

totalitarianism, 4

TQM, cf. total quality management, quality

trade-off, 47; cf. values

tradition, 39, 87-88, vs. collective mind, 162-164; cf. fact net or chap. 2 *passim*,  
Weltanschauung, history, past, future generations, ethics, religion  
tragedy, 177-178, 203-205; tragedy-comedy, 177-178; cf. drama, epic  
transaction, 133; cf. event, sale  
transcendental, logic, 145  
transdisciplinarity, 74-75, 195, **197-198**; cf. interdisciplinarity, multi-modality  
transitivity-symmetry, 134, 186  
translation, 105, 119, 125, 136; of inputs, 143; as formal redefinition of terms, 136; cf.  
interpretation, hermeneutics  
transparency; cf. understanding, satisfactoriness  
tree structure, 100, 104, 144; cf. net  
trial and error, 51, 83ff, 139; and improvisation, 139; cf. learning, (Leibnizian) net  
ranking, experiment, test, design, evaluation, change, shift-and-drift  
trilogy (cf. optimism), production-science-cooperation, 202-203; plenty-cooperation-  
heroic mood, 254; client-decision maker-designer are the same, 201, **204**  
triviality, of problem, 139-140; cf. simplicity  
trust, 153, 163-164; as confidence, 111; vs. suspicion of dialectic within a dialectic,  
183; cf. guarantor, warrant, God, love, friendship, ethics, hope, faith, belief, doubt,  
religion  
truth, 21, 25, 32, 37, 91, 96, 103-104, 118, 174, 257; as accuracy, 63;  
correspondence theory of, 160-161 and chap (5) *passim*; coherence theory of, see  
chap. (2) *passim*; intuitive, 25; true estimate, 51; privileged, 39-40; and cost, 91;  
Internetlike truth, 91; as end point of process, 37; cf. reality, objectivity, fact,  
depictive, accuracy  
Turing's test, (150)  
ubiquitous computing; cf. mobile Internet, communication  
uncertainty, 105, 109, 114, 153, 196, 201, 212; of doubt, 105; blocked out of  
discourse, 202; cf. risk, probability, doubt, statistics, conversation killing  
unconscious, 28, 120, 123, 203, 244, 264-265, 272; collective, 203; and creativity,  
**265**; input as part of the, **265**; cf. feeling, emotion, anti teleology, ateleology,  
postmodernism, intuition, Jung, myth  
understanding, 4, 49, 72, 75, 104, **198**, 203; and compassion 11; cf. explanation,  
meaning, reason, agreement, learning, satisfactoriness, interpretation and  
interpretive approach  
unexplainable events, 136

uniqueness, 32, 190-191, 193, 204-205, 245, **255-257**; in planning, 255; as differentiation, 265-268; of individual, 204; cf. individuation, generalization, otherness, method

unity, of client-designer-decision maker, 201, 204; cf. system, separability, entity, individuation, identification

unit, of measurement, 186-189; cf. measurement, standard, entity

universal proposition, 83

university, 57, 59, 122

usability, 101, 117-118, 121; cf. human-computer interaction HCI/CHI, purpose, measurement of performance, evaluation, satisfactoriness, quality, aesthetics, function-(functionality)

use or user behavior, 101, 117-118, 156; vs. designer, 118; user models, 125, 156

usefulness, 120; cf. utility, pragmatism, measure of performance

user friendliness, 121

user model, 10, 118, 121, 125, 146, 157; -language, 125; as observer-subject, 156-157; cf. model

utility, 120, 151-152, 163-164, 189, 200, 263; as measure of value, 152-153; vs. aesthetics, 189; cf. preferences

vagueness, 186, 245; cf. doubt, clear, clarity, distinct

validity and validation, 22, 29, 83, 85, 80, 88, 96, 103, 108, 115, 128, 130, 149, 162, 189-190, 192, 225, 242; as confirmation, 80; as verification, 185; as evaluation, 136; of apriori axioms, 130; of sensation, 103; of apriori, 128, 130; as relevance, credence or evidence, 171-173; and politics or use, 225; theoretical base for, 188; cf. verification, test, accuracy, truth, reliability, confirmation, precision, experience, proof, value-worth, evidence

value; 71, 73, 102, 152, 163, 137-138, 189-190, 200, 249; vs. good value, 95; measure or comparison of, 152; value preference, 152; value judgments, 102; of knowledge, 203; of income, 190; economic, 137-138; value judgement or valuation, 163, 169, 192; as good in activity itself, 249; value and information, 121-122, 163-164; enabling power as, 200; ultimate, 163; and fact, 164; measurement of, 152; šs personal value, 200-201; as quality, 190; as utility, 263-264; as trade-off, 47; added, 166; as power vs. ethic Peirce-Schiller in HCS, 95, 200; Aristotelian pluralism vs. Platonic monism (ref. Martha Nussbaum), 73; of measurement system, 190; cf. ethics, good, utility, quality, measure of performance, ideal, goal, ateleology, worth

variation, analysis or statistical, 65-66, 191, 193; significant, 193; cf. change, partitioning, disagreement

verification, 13, 185, 187; cf. validity, evidence, confirmation

veto power, 112; cf. counter-instance, politics of science, perfect observer

vicious circle, 169; vs. infinite regress, 168-169; cf. self-reference, regression

view, point of, 107, 149, 171, 177; sharing views, cf. agreement, consensus; cf. aspect, perspective, attitude

violence, as in terrorism, 173-174; cf. power, strength, Arendt, H.

virtual organizations, cf. virtual reality, Internet commerce, organization, system

virtual reality, **64**, (72), **96**, **122-123**, 128, 137-139, 159, (183); as ideal, 178; and aesthetic intuition, 144; as legitimate distortion of inputs, 156; reality of, **150**; relation to reality, 189; in measurement system, 187, 189; as adjustment of readings or observations, **195-196**; as abstract mode of representation, 137; as realistic world and representations, 138-139; as reality vs. illusion, 204; and modes of sensation (see synaesthesia), 100, 102; cf. virtuality, reality, ontological assumptions, mind, truth, simulation, representation (chap. 6), entity, measurement, visual, implementation, constructivism, imagination, aesthetics (appearance, perspective, sensation, imagination), abstract, illusion

virtuality, 19, 64, (72), 76, 122-123, (190), 195; vs. reality, 13; and distinction between reality and non-reality, 97; cf. reality, virtual reality and real, artificial, truth, error, system, perspective, synaesthesia

vision, 170-**171-172**, **174**; as thesis, 172; as policy, 180-185; visual recognition, 142; as conviction, 178; color perception, 157; and design, **173**; cf. idea, strategy, conviction, Weltanschauung, thesis, ideal, intuition, figure of thought, sensuous intuition, form, creativity, aspect, perspective, view, image, picture, pattern, observation, attitude, elusiveness, ateleology, tacit knowledge, inspiration

visualization, 125, 138-139; image recognition, 123-124; cf. representation, perspective, sensation, solution, virtual reality, human-computer interaction HCI

vitalism: cf. living systems

VR, cf. virtual reality

wandering (circumambulatio), 205

war, or terrorism, 162-163

warehousing, cf. inventory

warrant, 98, 163; warranted database, 195; for authority, 163; cf. guarantor, watchdog, accuracy, reliability, ethics, theology

watchdog, 135, 150, cf. guarantor, control  
we-them dialectics, 146  
weak philosophy, vs. strong implications, 152-153  
weapon, 73, 93; cf. kill maximizer  
Weick, Karl, see double interact **118-120**, stimulus response, repertoire of responses, vicious circle, interaction, consensus  
Weltanschauung, 32, 169-179, 181-185, 194, 238, 250; and information, 169-179; counter-Weltanschauung, 224, 249; and conviction, 98; dual, 198; and Singer's natural image, 194; cf. culture, tradition, view, perspective, aspects, meaning, vision, image, world, ontology  
wff (well formed formula), 31  
what-how, 84, (128), 195, 223  
whole, 193; system, 68, 71; whole system as God, 69; wholeness as system, **145**; scope of inquiry, 195; cf. system, context  
Whorf, B. (language), 144-145  
why, 4, 5, 115, **163, 172, 194**; as power in design, 6; and because, **79ff; vs. what, 115**; cf. explanation, meaning, because, causality, teleology, how, what  
why-not, 164, 172, **199**; cf. so-what, explanation, because  
will, 169, 170-172; general, 162; as supreme objective mind, 174, 176-177; cf. ethics, evaluation, value  
wisdom, 236-273; cf. knowledge  
Wittgenstein, L., (151), (160-161); language games, (105): cf. (Leibnizian) nets  
work, division of, 63, 74, 91-92; as human capability, 118-119; work practice, **166**; cf. action-activity, production, creativity, organization, participation, cooperation  
work flow, **166**; see activity, producer-product, reengineering, effectiveness, efficiency, productivity  
world; states of, 160; phenomenal, 138-139; as Weltanschauung or image of, 76, 169-170, 196; basic or realistic, 138; imagery for description, 209ff; in itself, 242; of the inquirer, 160; cf. Weltanschauung, reality, perspective, ontology, imagery, natural imagery  
World-Wide-Web WWW, 15, 26, 117-118, 120, 176-177; as network of information, 9; as separability of storage and retrieval, 61-62; as library search, 117; cf. Internet, multimedia, hypermedia; anti teleology, ateleology, network, postmodernism, Leibnizian IS or fact nets, Lockean IS or trees, Hegelian IS or debate; database, data collection, libraries, separability

worth, cf. value