Architectonic Modeling of Iterativity Elements in the Intelligence Cycle
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1. Introduction
This thesis advances a comprehensive architectonic model of the intelligence cycle, reconceptualizing intelligence analysis as an iterative, nonlinear, network-centric and subject-dependent process grounded in an essentially ordered conceptual classification within social informatics. It addresses the mismatch between classical linear cycle models and contemporary collaborative, user-centric environments characterized by nonlinearity, instability, irreversibility, chaos-like dynamics and exponential information growth. In such conditions, knowledge has become the primary production factor, and the capacity to generate and use intelligence effectively is crucial for the competitiveness of social systems.

Prevailing intelligence cycle models still treat the process as a linear value chain from data to knowledge and underrepresent feedback, communication, subjectivity and socio-technical infrastructures. The central claim is that only a model built on an architectonic, natural classification of intelligence-related concepts—integrating systemology, dialectical materialism and radical constructivism—can adequately represent and guide intelligence analysis in contemporary knowledge-based societies.

2. Theoretical and methodological framework
The work is situated within post-non-classical scientific rationality, where objects of study are complex, open and self-referential, and where the researcher is reflexively included in the research process. Three philosophical traditions underpin the thesis:

Systemology, which provides tools for natural, essential classification of social objects and processes and for constructing hierarchical architectonic schemes.

Dialectical materialism, which introduces notions of contradiction, development, qualitative change, unity and struggle of opposites and the primacy of practice, all crucial for modeling dynamic, non-equilibrium intelligence systems.

Radical constructivism, which emphasizes the constructive, autopoietic nature of cognition, the centrality of self-reference and the impossibility of observer-independent descriptions in social systems.

These philosophical methods are complemented by a broad theoretical corpus including reflection and activity theories, functional systems theory, information metabolism, noosphere theory, habitus and communicative action, teleonomic theories of information, evolutionary epistemology, autopoiesis, systems theory and cybernetics, virtuality and noetic theories, synergy and integral approaches, as well as strands of social informatics, business intelligence, competitive intelligence and knowledge management.

Methodologically, the research employs:

General scientific methods: idealization, abstraction and concretization, induction, deduction, analogy, formalization and modeling.

Specialized techniques: cognitive mapping (Visual Mind), factographic content analysis (Semantic Archive), semantic information retrieval (Google, Google Scholar, EBSCOhost), systemological terminological and conceptual analysis, structured analogies, retrospective analysis, morphological analysis, analysis of competing hypotheses, testing key assumptions, structured self-criticism, expert elicitation and business-process modeling with ARIS.

The central methodological hypothesis is that the predictive force of a naturally ordered, architectonic classification of domain concepts can be rationally used to design an effective intelligence cycle model under the epistemic conditions of post-non-classical science.

3. Reconstruction of the disciplinary matrix

The first substantive step is the reconstruction of the disciplinary matrix of intelligence analysis within social informatics. Using factographic content analysis and semantic search over more than 20,000 author’s sheets of monographs, articles, dissertations, conference papers, standards and technical documents, the author systematizes key terms and concepts used in:

social informatics

intelligence analysis management

business intelligence

competitive intelligence

knowledge management

psychology of intelligence analysis.

Systemological terminological and conceptual analysis eliminates overlaps, contradictions and gaps in the field's terminology and aligns terms with an underlying system of concepts according to completeness, connectedness and functional adequacy. The study clarifies how "social informatics" has developed in European/Soviet and North American traditions and demonstrates conceptual overlap between social informatics and knowledge management, and between intelligence analysis and competitive intelligence. Terminological differences are interpreted as reflections of deeper methodological splits between positivist and dialectical approaches.

Within this framework, intelligence analysis is treated as a central practice of social informatics: a teleonomic, goal-oriented process by which information flows are organized to support decisions in complex social systems. The teleonomic perspective emphasizes goal-directedness structured by internal programs and feedback, which is considered more adequate for modeling contemporary intelligence processes than classical teleological language.

4. Critique of classical intelligence cycle models
The thesis offers a detailed critique of classical intelligence cycle models. The traditional six-stage model (requirements, planning/direction, collection, processing, analysis/production, dissemination), associated with Sherman Kent and later elaborated by R. Clark and others, is reconstructed. Variants such as the SCIP "value chain" model of competitive intelligence and D. Yelchaninov's six-stage cycle (data collection, information resource formation, knowledge base creation, analytical document preparation, decision support, implementation with stakeholder analysis) are also examined.

These models:

represent a fundamentally nonlinear, feedback-rich process in a linear, quasi-production format

lack an explicit and adequate representation of the information-communication field and of communication in transforming information into knowledge

treat the subjective factor—cognitive styles, individual cognitive tendencies and

emotional dynamics—only marginally

under-integrate modern automated analytic systems, network communication structures, social media and collaborative knowledge platforms.

Authors such as R. Clark, A. Hulnick and M. Lowenthal criticize the traditional cycle for oversimplicity, theological rigidity, communication barriers and inability to describe real knowledge generation. The dissertation concludes that incremental upgrades—target-centric approaches, multidimensional analysis, “reorient the arrows,” active collaboration models and SCIP-type frameworks—have not resolved the fundamental problem of representing a linearized version of a nonlinear process and that a new architectonic solution is required.

5. Architectonic scheme of intelligence analysis elements
To provide such a solution, the author constructs an architectonic scheme of intelligence analysis elements. This scheme hierarchically classifies:

models, practices, procedures, operations, technologies, rules, norms, regulatory acts and standards

software tools and technical characteristics

scientific theories, hypotheses, concepts, approaches and moduses

methods, techniques, analytical tools and modes of reasoning

domain concepts and terms

psychological types and operational emotions.

The scheme seeks to capture intelligence analysis as a mode of constructing predicative representations of objects in a rhizomorphic natural system within a hierarchical conceptual system, with the aim of adapting the subject’s activity to the functional demands of a natural supersystem. Because it rests on essential classification, the architectonic scheme has predictive force: it can be used to infer missing elements, anticipate structural components required in new contexts, project future developments in intelligence analysis methods and tools and detect inconsistencies between conceptual and practical structures. It provides the backbone and state space for the new intelligence cycle model.

6. Embedded eight-step architectonic intelligence cycle
Within this architectonic framework, the thesis formulates a new intelligence cycle as an

eight-step, strongly iterative, nonlinear and self-modifying process.

Structured target setting: intelligence requirements are modeled as a dynamic network of goals and rules embedded in the architectonic conceptual scheme and shaped by cognitive profiles of consumers and analysts.

Mapping the information-communication field: the system is positioned as a node in a nonlinear, networked information-communication field, using cognitive maps and nonlinear communication models to structure sources, channels, actors and relations.

Iterative data integration: documentary, communicative and media flows are collected and immediately integrated into conceptual clusters via content analysis, semantic search, deep-web extraction and sentiment/tone analysis.

Architectonic processing and ontologization: information is transformed into structured information resources and knowledge bases aligned with a Wiki-based domain ontology that reflects the architectonic classification of concepts.

Iterative synthesis–analysis: data and knowledge fragments are synthesized into conceptual clusters, which are then repeatedly analyzed using structured techniques; results may prompt reconfiguration of clusters and revision of the ontology.

Embedded cognitive debiasing: psychometric profiling and architectonic classifications of psychological types and operational emotions support diagnostic, contrarian and imaginative techniques for managing individual and group biases.

Intelligence production and metacommunication: intelligence products are generated with explicit links to ontology elements, methods and sources, and are complemented by social media imagemaking and packed-symbol communication.

Structured feedback and cycle reconfiguration: feedback from intelligence consumers serves as co-constructed input that evaluates products, restructures goal systems and may modify the ontology and even the cycle’s own structure, closing a strong, self-modifying iterative loop.

7. Psychological dimension and cognitive bias
A distinctive contribution is the deep integration of cognitive bias and emotions into the architecture of the intelligence cycle. Individual cognitive tendency is defined as systematic preferences in methods of knowing, heuristics, perception, reasoning and decision-making that generate stable distortions in intelligence analysis. Existing analytic-school research is acknowledged for clarifying the problem space but is criticized for lacking a dialectical and systemological baseline and for relying on

fragmentary techniques tied to particular emotional processes.

The thesis responds by building an architectonic classification of psychological types and operational emotions and by using it to construct coherent debiasing strategies within the cycle. Psychometric tools (Briggs–Myers questionnaires, socionics, psychometric and sociometric techniques) are used to profile analysts, form balanced teams and align cognitive styles with task requirements.

8. Communication structures, automation and social media

The architectonic model systematically integrates communication structures and automated analytic systems. Nonlinear communication models—spiral metaphors, autopoietic consensus interactions, transactional models and network community models—are embedded in the information-communication field step and provide a more accurate representation of how information, meaning and influence propagate within and around intelligence processes. Automated systems for content analysis, data mining, deep-web extraction, sentiment analysis, soft computing, real-time OLAP and process mining are incorporated as constitutive infrastructures of collection, processing and analysis.

Social media imagemaking and packed-symbol communication extend the cycle into public communicative environments, treating external communication as part of intelligence analysis and as a vehicle for metacommunication and reflexive control over the process.

9. Scientific novelty and practical significance

The thesis's scientific novelty lies in developing a new architectonic model of the intelligence cycle and associated conceptual and methodological bundles. It uses natural system properties to construct an architectonic scheme of concepts with predictive force; normalizes the subjective factor in cognitive communication; integrates ontological, psychological and socio-technical dimensions into a single cycle; and demonstrates applicability to knowledge-oriented business processes.

Practically, the architectonic intelligence cycle model can be used to organize intelligence-oriented information-analytic services, media organizations, public relations units and educational institutions; to design knowledge-oriented business processes; to develop professional standards; and to support curricula and courses in social informatics and intelligence analysis.