Logical Stages of Rational Knowledge: 
*From Prior Knowledge to Process-Skills*

**Abstract**

The following script explores knowledge as the result of learning processes. It defends the position that knowledge is a foremost social and evolutionary phenomenon. It is demonstrated how knowledge evolves within rational learning and how it renders itself at each distinct stage.

*Keywords: Rational Epistemic Foundation, Prior Knowledge, Explicit Knowledge, Learning Processes, Social Learning*

In memoriam Prof. Howard Barrows

I. Knowledge without Rational Epistemic Foundation

Every day we share many justified true beliefs such as cultural narratives, traditional wisdom, personal testimony, reports of the mass-media or beliefs based on direct experience which we regard as sufficiently reliable to not seek immediate reductionist proof. Credulism, Reliabilism and Pragmatism form an alliance of convenient Common Sense:

A coherent web of non-contradictory knowledge, based on reliable sources who apply 'best practices' of virtue epistemology, combined with the need to make realistic and heuristic day-to-day decisions make for a compelling argument that not all our knowledge necessarily requires a rational epistemic foundation. The complexity of our life-world adds to the preference of nonreductionist knowledge: we cannot possibly test and proof all arguments of the public sphere since such testing would take more time and effort than the creation of new knowledge. We could call this the 'Reductionist's Paradox'.

Our critical abilities are realistically limited by depth and breadth. We shall refer to all knowledge without rational epistemic foundation in the following as 'prior (implicit) knowledge', the knowledge which is, quasi ontologically, given to us by our historical and cultural context.

By contrast, all knowledge which is rationally distilled from reflective inductive and deductive inferences shall be referred to as 'explicit knowledge'.

II. Problem-Solving as Knowledge Creation within a Social Context

We do not seek knowledge primarily for the sake of finding truth, but for finding means for our survival. The struggle to persevere, to use Spinoza's term, developed evolutionary long before intellectual debate. This view breaks with much of philosophical tradition. The need for knowledge arises from the need to survive while the concept of truth emerges parallel as the guiding concept for the reliability of knowledge: We realize *ad posteriori* that the world and human life-world follows rational principles that render our world intelligible and manageable. In this regard truth, as a concept, appears not just as the mere by-product of evolution but a supervening property: Only because we can think and act rationally based on a body of consolidated knowledge we can ensure our survival and advance cultural evolution.

The social argument of knowledge goes like this: *It is in our nature to exchange ideas and imaginations, to build mental models of our world and re-apply this knowledge in practice for the creation of our shared life-world.*
Analysis is logically followed by synthesis and finally application. This is why knowledge creation is at heart a socio-political activity. Individual authorship and reasoning is embedded in the dialogue with others and the communicative competence of others integrates, nourishes and directs individual authorship. Rational learning evolves in the following stages:

**Stage 1: Communicative Setting and Virtues of Participants**

At the root of all knowledge we find the motivation of a group or an individual to solve a problem (in philosophy this could e.g., be a summary) or to overcome a challenge. Virtue epistemology plays a huge part in this stage as we appeal to the epistemologically rational competence of participants. Virtues such as intellectual honesty, curiosity, the ability to listen to others and to refer to critical argument constitute some of these essential prerequisites.

These virtues are complemented by communicative rational rules and practice, ensuring that open inquiry is possible at any stage of the process, that all speakers are given the same fair chance to forward their statements or that silence equals consent, meaning that in case of disagreement any counter-arguments need to be voiced out constructively in order to become part of a rational discourse.

**Stage 2: Problem Identification and Coherence**

At the next stage participants present, identify, clarify and reframe the problem. The knowledge of contextual relevance and meaning is of importance: which properties and forces create the incoherence and open ends of the problem in relation to its context?

The epistemological dimensions of coherence and de-coherence (Coherentism) come into play since we cannot understand a problem or a context without understanding the relations between the instances of presented explicit or prior knowledge. The extraction of consolidated facts from beliefs ends in the explicit summary of a challenge at hand in context. The appeal to contextualism rules out initial, far-fetched assumptions which are not relevant to the issue at hand.

**Stage 3: Bidirectional, Evidence-based Relation of Facts to Ideas**

Any initial ideas, imaginations, beliefs or guesses about a problem cannot be arbitrary since they need to make sense in the light of the presented facts and evidence which has been firmly established in the previous stage. Initial ideas point logically in two directions: one path asks for the origin of the problem and the other begs for a solution. Initial ideas need to relate to external facts to claim rational ground.

Our epistemic responsibility for our beliefs evolves therefore bi-directionally: mental models require accommodation of evidence and the incoherence of evidence provokes our imagination to develop solutions.

We would be ignorant to develop solutions without evidence, e.g., merely based on intuition, or to force ad-hoc responses to a problem without having it properly understood beforehand. Apart from instrumental solutions development we ask critically for the rational justification of suggested goals, such as e.g., in technology assessment.

**Stage 4: Identifying Learning Issues**

At this stage we exercise constructive skepticism: in order to develop solutions we need first to determine what we do not know. We need to ask ourselves critically which knowledge or skills are missing that keep us from developing a solution. Subsequently we identify learning issues and establish adequate research resources.

**Stage 5: Research & Research-Revision**

To seek and summarize relevant information is the main task of research. The emphasis on relevant information underpins the call for epistemological rationality. At some stage research needs to get reviewed and constructive skepticism will ask again if we really have all physical and mental resources established to solve a problem. This may not always be the case so that research in practice turns into a reiterative epistemological activity. Sources of information need to be evaluated for credibility and validity. The part of communicative rationality is expressed in the peer-sharing of information and the consensual consolidation of presented researched knowledge.
Stage 6: Solutions Development

Next we apply relevant knowledge to the identified problem. We discuss, develop and justify solutions and provide an explanation how these solutions tracks back to the original problem. This approach ensures rational coherency and keeps the link between premise and conclusion transparent.

Solutions development is about the creation of new knowledge. Explicit knowledge can be traced back to initial evidence whereby prior knowledge may or may not.

Stage 7: Review and Assessment

A process closes with a procedural critique: Self- and group feedback on the group’s-functioning and/or the individual problem solving process plus a review on the knowledge learnt end the cycle. Review allows for the development of epistemological virtue since these virtues are acquired soft-skills that keep on improving through continued lifelong learning.

Summary

Epistemology plays a critical and vital part at each stage of a Learning Process. The closing argument is that all seven stages form a mutually dependent chain of stages since each stage represents a prerequisite for the next.

Solutions are developed, not assumed, and they need to answer in responsibility. We can verify the model by suggested falsification as a thought-experiment: what happens if we consider any stage as false (or non-applicable) and simply leave it out?

The main difference between rational and prior knowledge is not only its traceability, but also the fact that we can give rational account about every step we undertake. Meta-cognitive rationality implies that we can not only give good reasons for what we do or how we are doing things, but mostly that we know why we chose these reasons. In terms of performative rationality we assess ourselves in the relation to others during and at the end of learning processes.