Questions from the Scientific Research Toolbox Instrument <http://tdi.msu.edu/>

**Motivation**

Core Question: Does the principal value of research stem from its applicability for solving

problems?

1. The principal value of research stems from the potential application of the knowledge

gained.

2. Cross-disciplinary research is better suited to addressing applied questions than basic

questions.

3. My disciplinary research primarily addresses basic questions.

4. The importance of our project stems from its applied aspects.

5. The members of this team have similar views concerning the motivation core

question.

**Methodology**

Core Question**:** What methods do you employ in your disciplinary research (e.g.

experimental, case study, observational, modelling)?

1. Scientific research (applied or basic) must be hypothesis driven.

2. In my disciplinary research, I employ primarily quantitative methods.

3. In my disciplinary research, I employ primarily qualitative methods.

4. In my disciplinary research, I employ primarily experimental methods.

5. In my disciplinary research, I employ primarily observational methods.

6. The members of this team have similar views concerning the methodology core

question.

**Confirmation**

Core Question**:** What types of evidentiary support are required for knowledge?

1. There are strict requirements for the validity of measurements.

2. There are strict requirements for determining when empirical data confirm a tested

hypothesis.

3. Validation of evidence requires replication.

4. Unreplicated results can be validated if confirmed by a combination of several

different methods.

5. Research interpretations must address uncertainty.

6. The members of this team have similar views concerning the confirmation core

question.

**Reality**

Core Question**:** Do the products of scientific research more closely reflect the nature of the

world or the researchers’ perspective?

1. Scientific research aims to identify facts about a world independent of the

investigators.

2. Scientific claims need not represent objective reality to be useful.

3. Models invariably produce a distorted view of objective reality.

4. The subject of my research is a human construction.

5. The members of this team have similar views concerning the reality core question.

**Values**

Core Question: Do values negatively influence scientific research?

1. Objectivity implies an absence of values by the researcher.

2. Incorporating one’s personal perspective in framing a research question is never valid.

3. Value-neutral scientific research is possible.

4. Determining what constitutes acceptable validation of research data is a value issue.

5. Allowing values to influence scientific research is advocacy.

6. The members of this team have similar views concerning the values core question.

**Reductionism**

Core Question**:** Can the world under investigation be reduced to independent elements for

study?

1. Differences in spatiotemporal scales impede useful synthesis in cross-disciplinary

research.

2. The world under investigation is fully explicable as the assembly of its constituent

parts.

3. The world under investigation must be explained in terms of the emergent properties

arising from the interactions of its individual components.

4. My research typically isolates the behavior of individual components of a system.

5. Scientific research must include explicit consideration of the environment in which it

is conducted

6. The members of this team have similar views concerning the reductionism core

question.