SECTION 1 – Title, Abstract, and Keywords

Title: **What Is (Social Science) Theory, with Help from Stephen Hawking's A Brief History of Time**

Abstract: Students often struggle to understand what is meant by the word *theory* especially in what they expect to be a "business" class, even when they have been exposed to the popular scientific gestalt all their lives. This is a first-or-second-day-of-class activity that I use to help students understand what social science theory is using an area of unrealized common ground: their general knowledge of humans' evolving conceptualization of the universe from the Greeks to the Big Bang. In preparation for the activity, students read the first chapter of astrophysicist Stephen Hawkin's 1988 popular science book, A Brief History of Time. The instructor then leads a discussion, encouraging students to offer "truths," "rules," or "principles" of "how science is done." Through a semi-inductive approach, we finish the activity with a list of at least 13 "general principles" for understanding what scientific theory is.

Session Description: A first-or-second-day-of-class activity that I use to help students understand what social science theory is using an area of unrealized common ground: their general knowledge of humans' evolving conceptualization of the universe from the Greeks to the Big Bang. In preparation for the activity, students read the first chapter of astrophysicist Stephen Hawkin's 1988 popular science book, A Brief History of Time (but you don't need to have read it to attend the session). I'll lead a class-like discussion demonstrating a semi-inductive approach to developing a list of "principles" for understanding what scientific theory and its purpose.

Keywords: first day, explaining theory, science

SECTION 2 - Format

This is an **activity**. Best suited for a **traditional classroom** of **undergraduate students**, but could still be appropriate for some **graduate/professional students**.

SECTION 3 – Time Requested

Time required is **30 minutes**.

In class, the exercise fills a 60-76 minute class, but I think can be effectively demonstrated for this audience in 30 minutes. I'm sure I could also fill a 60-minute slot, but it is not necessary.

SECTION 4 – Planning Details

No additional resources beyond computer, projection, and white board with markers needed.

SECTION 5 – Teaching Implications

There are two major strengths of this activity. First, the activity on its face is designed to teach students fundamental principles of scientific theory. Second, the activity, used in class on the first or second day of class, helps set the tone for the interactive classroom experience that I want to create. Let me discuss the second strength first.

I have found that this activity sets the stage for the classroom culture that I want to maintain throughout the semester. It does this by emphasizing the following norms:

(1) It is difficult for students to meaningfully participate in class discussion without having completed the assigned reading.

(2) Knowledge is *created* through class discussion, rather than originating with the instructor and *distributed* to students.

(3) We develop the "right" answers together, as a class, through a semi-inductive approach, rather than accepting a text as doctrinaire.

(4) The activity often enables peering-behind-the-curtain moments—those opportunities where students catch a glimpse of the messy nature of knowledge, and begin to grasp its socially constructed nature.

All of that might be reason enough to use the activity. However, I also think that students come away from class with a deeper understanding of some very basic principles of science, things they may have thought they already knew, but now understand a little more deeply or a little meaningfully. For instance:

(1) Science is evidence-based, and therefore our discussion of management practice will be evidence-based.

(2) Scientific knowledge is dynamic and evolving. And for scientific understanding to evolve…

(3) …what we think we know must be challenged. Therefore…

(4) …we must learn to be comfortable with challenging what we think we know.

In later units, as we discuss management theory from topics ranging from diversity to motivation to negotiation to power, we return again and again to the framework developed in this early activity to demonstrate how what we know fits within our notion of what theory is and what function it serves.

SECTION 6 – Session Description and Plan

If I were using this activity in my classroom, students would have been assigned the reading (the first chapter of Stephen Hawking's A Brief History of Time) prior to class. However, to demonstrate the activity advanced reading will not be necessary.

In the first chapter of A Brief History of Time, Hawking outlines a narrative of "our evolving understanding of the universe." He begins with the Greeks, and their rationale for believing the Earth was round, then proceeds through the ages, highlighting various scientific discoveries and ideas that shaped our picture of the universe and the people associated with those discoveries, including Ptolemy, Copernicus, Newton, and Hubble.

I will begin by distributing an abbreviated version of the reading with a few notes marking key passages to participants. I will then provide some context for the exercise—that the activity is to be used the first or second day of class to help us understand what theory is—and I will provide a brief summary of the reading.

At this point I will lead a discussion as if participants were students. I'll draw attending to certain passages in the text and ask questions to help prompt discussion around what we can learn about what theory is or how scientific theorizing is done based on the narrative Hawking provides in the text. "Principles" of theory emerge naturally from the stories and examples Hawking provides. As they do, the discussion is amplified by asking for and sometimes offering examples that illustrate the same ideas in the social world. I have some prepared slides to help highlight certain points.

There is room for various outcomes, given the inductive, interactive nature of the planned discussion, but I anticipate the development of a list of "principles" that will likely include the following:

(1) Theory is based on observations.

(2) Theory is based on assumptions.

(3) Prejudices and biases (can) influence theory.

(4) Politics (can) influence theory.

(5) Simpler, more parsimonious theories are better than more complicated, less parsimonious theories.

(6) Theories changes with new observations. Theories also changes as assumptions, prejudices, biases, and/or politics changes.

(7) Theories should be accurate.

(8) Theories should be generalizable.

(9) Theories should be simple. (But they can't be all three.)

(10) Theories should predict (and/or explain).

(11) Inaccurate or incomplete theories can still be useful.

(12) New theories are usually extensions of old theories.

(13) The reality and necessity of partial, incomplete theories.

SECTION 7 – Application to Conference Theme

I'm not sure that my proposal fits with the conference theme in any meaningful way. I mean, maybe *United in the Service of Better Understanding Theory*?

SECTION 8 – Unique Contribution to OBTC

I have not presented, published, or proposed this activity to OBTC or any other professional organization or distributed it in any other knowledge-sharing context.