- ➔ science as a way of knowing
- ➔ phenomenology of learning technical information
- ➔ affect of science / the scientific process
- ➔ in defense of science, basically
- ➔ where does science live in the web of ideas from sound studies / Keywords In Sound?
- ➔ the body in science
- ➔ hearing in science
- ➔ data sonification – statistics, acoustics, dB, the human as the basis of quantity, 10 toes
    - ◆ an attempt to document experience in a way that transcends culture
    - ◆ ethnography (?check?) was an attempt to bring the rigor of science to the study of other cultures
    - ◆ on science as a human activity

- ➔ states of silence
- ➔ silence in improvisation / free jazz

I'd like to address measurement of sound and the intersections of quantitative measurement and scientific observation with sound studies and phenomenology. As someone with a physics/acoustics background, I've noticed that a number of scholars we've read have set up an opposition between scientific study and the study of lived, multisensory experience; because my own lived experience includes years of participation in scientific and technical processes, I'm skeptical that these approaches to knowledge are opposed. I want to explore that relationship and also the notion of silence, which does not exist outside of or within human experience and yet is fundamental to physical measurement and all studies of sound.

—----------

ABSTRACT // POINTS TO ADDRESS

- frame as intersections of phenomenology, sound studies, and sound science?
- cogito ergo sum, my interpretation, Stanford Encyclopedia about its origin – it's about lived experience
    - historical definitions of "thinking" vs contemporary?
- definitions of the scientific process (Popper, Kuhn) and scientific observation
- origins of the decibel scale
- origins of hertz (?) – different or same section?
- what does acoustics document? what doesn't it document?
- what do numbers document? what don't they document?
- numerical measurement as a phenomenological method ergo science as one phenomenological approach
- silence: the ground of measurement scales, the ground of multisensory sonic experience and sound perception
- science and phenomenology have a shared ground of experience

    - both are incomplete attempts to document experience, each with their own tendencies and weaknesses
- Conway's law, divisions between scientific communities and humanities communities (and spiritual communities)

—----------

ABSTRACT // ORGANIZATION

- looking at places where sound studies intersects with numerical measurement and the scientific process
- the root of numerical measurement, part I decibel scales
- the cogito – Cartesian dualism and an implied mind/body split is presented as the philosophy against which much of the material in this course reacts
    - Descartes did promote mind/body dualism
    - however, the cogito is being misunderstood IMO – modern and postmodern scholars are backporting a modern or postmodern notion of cogitation onto it
    - the Enlightenment promoted rational thought, but this foundational philosophical idea was based in embodied experience – was it an intuitional or inferential piece of philosophy?
    - while activating philosophical modernity, Descartes was founding it upon sensation, the untouchable common conscious experience
    - treating scientific and rational cogitation as in conflict with phenomenological approaches to knowledge is, itself, a form of dualism – what is that dualism?
    - disowning scientific process is disowning a part of the human experience, as opposed to putting it in its place as a part of the pursuit of knowledge
- the scientific process as a part of phenomenological study
    - what is the aim of science? numerical measurement?
    - what is the aim of phenomenology?
        - documenting, transmitting knowledge ?
        - is sharing of knowledge the desired goal of scholarship?
    - "anecdote is not evidence" – how does the documentation of personal experience (anecdote, phenomenology) fit into the pursuit of knowledge? how can phenomenology and personal observation be part of science, and how can science contradict them, and how can these methods inform each other to shape our experience and our perception of shared knowledge?
    - what is acoustic scientific observation? how does it relate to listening as defined by sound studies (see Keywords In Sound ch. on listening)?
        - science attempts to methodically relocate our senses, if only temporarily in the course of an experiment or thought experiment
        - a deliberate attempt at personal repositioning

        - outsourcing the guidance of our senses, not to a musical culture or community, but to a particular process guided by the deliberate attempt to defy our expectations / disprove our assumptions
        - deliberate disorientation
    - what is scientific knowledge transmission? how does it relate to other kinds of knowledge transmission?
    - how does scientific observation fit into the ways of observing, knowing, and transmitting suggested by sound studies and phenomenology?
- the root of numerical measurement, part II silence
    - scales of numerical measurement are founded in silence, human experience
    - what is silence?
        - not a physical quantity – the decibel scale is a purely relative (dimensionless) scale, and pressure waves exist everywhere there is matter dense enough to propagate them
        - not a sensory reality – the body itself makes audible sound in the absence of extra-body sources of vibration
        - not monosensory
        - spiritual (Buddhist, Christian)
        - mental
        - state of consciousness / awareness
        - a powerful reminder that scientific observation proceeds from the sensorium, even as it contributes knowledge that defies intuition, spirituality, consciousness, cultural expectation, and other roots of perception – that is the power of science and the value of it in the project of phenomenology and sharing of knowledge
    - science and numerical measurement shape our perception, defy our perception, are based on our perception, are one more tool for us to use in our knowledge project – what is our project?
    - as scholarship moves beyond Enlightenment era notions of duality, we have to be cautious of discarding the value to be found in scientific methods and in the beautiful experience of having our intuition, spirituality, expectations defied in service of forming a more harmonious and experientially concordant paradigm

—----------

How does numerical measurement relate to sound studies? Where does the subfield of physics called acoustics intersect with phenomenological approaches to sonic knowledge? This paper addresses the origins of the decibel and Hertz SI units in sensory experience and compares scientific observation with phenomenological and sound studies definitions of listening.

The dualist foundation of modern philosophy laid by Rene Descartes is frequently treated by sound studies scholars as a negative ground against which to build alternative, non-dualistic approaches to documenting and transmitting sonic knowledge. As a result, phenomenological

studies and sound studies scholars have varied relationships with numerical measurement, which can both abstract sonic knowledge away from perceptual experience and root it in perceptual experience. Examining these measurement scales, the process of scientific observation, and Descartes' *Meditations,* this paper attempts to explore and complicate the distinction between acoustic scientific knowledge and other varieties of sonic knowledge. How does scientific observation, knowledge, and transmission fit into the ways of observing, knowing, and transmitting suggested by sound studies and phenomenology? And how does silence, the basis of acoustic measurement scales and also disparate ideas of sound, music, and noise, demonstrate or fail to demonstrate a common rootedness of these methods of knowing?