WEEK 3 - October 21
How the Mind Reads
Discussion leaders: Kristin Poinar and Eva Stueeken
Reporters: Darci Snowden and Jessica Lundin

McIntyre, M.E. 1997. Lucidity and science I. writing skills and the pattern-perception hypothesis. *Interdisciplinary Science Reviews* 22, 199-216.

The McIntyre paper focused on how to write scientific papers in the most lucid way possible, based on how the mind unconsciously perceives 'patterns' or 'models'. The author claimed that lucid writing can save at least 10 percent of the time that writers, editors, referees, and thesis supervisors spend working on scientific papers. McIntyre focused on several threads for how the brain interprets information, including: patterns, perceptual grouping, pruning, whether to repeat or vary, cohesion and coherence, and organic change. The presenters supplemented these ideas with several examples, including image puzzles and quotes, to illustrate how our brains process images through shape recognition, negative space, and other 'models' of understanding. Psychology of 'feature integration theory' was presented with a flow chart showing how objects are broken down into directives. Ironically, this paper was found to be not lucid by some students in the class. For example, several students mentioned that they read the text over somewhat quickly looking for the main points of the text, but they did not seem to stand out from the supporting material. Furthermore, the authors failed to give a clear definition of what the 'pattern perception hypothesis was' upfront. This failure made the many references to the 'hypothesis' more difficult to interpret.

Here is a list of some of the main ideas:
Patterns: Readers make patterns/models to understand stimuli. Whenever possible, use familiar patterns while writing, instead of being inventive. This will make scientific papers more clear and easy to understand.
Perceptual grouping: 'The brain is good at filling in data gaps.' (McIntyre) The mind fills in gaps in familiar patterns voluntarily, unconsciously, and quickly. Therefore, leaving out words or phrases is tempting. However, making judgments on what words can be omitted based on the reader's ability to fill in the gaps can be tricky. Unless you are absolutely sure then the words that you have written are clear for a first time reader, it is best to fill in the gaps.
Pruning: Excessive pruning detracts from the presentation by reducing readability and rhythm of the material, while excessive words can detract from the argument as well. A balance must exist.
Repeat or vary? Repeat is the answer. It is less confusing to repeat a noun that to replace it with pronouns. When writing multiple drafts, writers become bored when looking repeatedly at the same word or sentence structure. However, a

first time reader does not find repetition boring, because they read clear sections quickly. This was considered to be one of the best messages of the paper in the seminar discussion.

Coherence and Confusion: Our brains are drawn to puzzles, perhaps to improve our models for patterns and perceptual grouping. However, it is still better to be straightforward in scientific writing.

Organic change: When unfolding new concepts, change should be gradual rather than abrupt. McIntyre gave an example in music, where there is repetition in the notes and words in 'oh what a beautiful morning'. The small changes in the chorus notes and words keep listeners 'hooked'. In writing, this means that new ideas need to be preceded by whatever familiar concepts are needed to set the context.

First drafts: When writing your first draft, leave neatness and succinctness for later.

Advice from McIntyre's website, paraphrased:
- Safely First
- Simplify sentences
- Avoid ambiguous pronouns
- Use commas
- Repeat words
- Redundancy is ok
- Parentheses + italics should be sparse

These things act to:
- Force the writer to decide what to call things
- Make it easier for the writer to find coherent order
- Help the writer to better indicate technical terms/mathematical symbols