Reading for Rhetoric

The Art of Reading Research Articles

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Learning Objectives

- By the end of this seminar, you will be able to:

  - identify key rhetorical elements of research articles

  - summarize research articles in terms of these rhetorical elements

  - reflect on the way in which these rhetorical elements are inflected in your own discipline

Outline of Presentation

- Reasons to read for rhetoric

- Classical Definition of Rhetoric

- Definition of "genre" and "genre analysis"

- Brief description of ESP (English for Specific Purposes) genre analysis

- John Swayles' C.A.R.S. (Create a Research Space) model

- My simplified version of that model

- Genre/rhetorical analysis of three articles in different disciplines

Reasons to Read for Rhetoric

- To improve your comprehension. The ability to identify rhetorical elements gives you "advance organizers" for the material you're reading, and keeps you from being overwhelmed by detail.

- To increase your reading speed. At least initially, you can ignore the overwhelming detail that can slow you down.

- To improve your recall. A simple narrative is easier to remember, and when you are ready to attend to detail, your sense of the overall narrative helps you to attach relevant details to it in a memorable way.
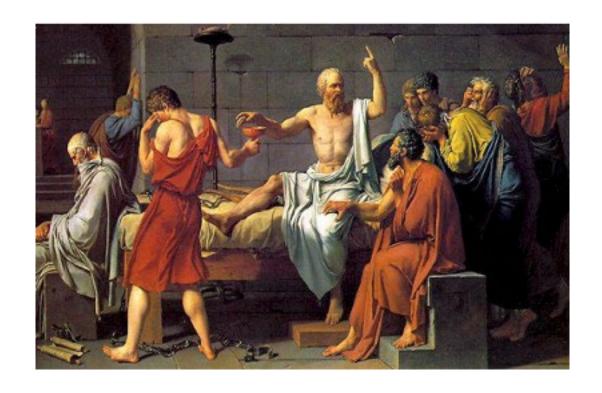
Reasons to Read for Rhetoric

- To gain explicit knowledge of the rhetorical norms of your discipline. These norms rarely rise to the level of explicit discourse. This knowledge is crucial when it comes time to write.

In Classical Terms, Rhetoric Is the Art of Persuasion

ARISTOTLE'S 3 RHETORICAL MODES OF PERSUASION

- LOGOS: **persuasion by means of logical argument**

- PATHOS: **persuasion by appeal to the audience's emotions, interests, values.**

- ETHOS: **persuasion by convincing an audience of the speaker's good character and expertise**

Definition of "genre" and "genre analysis"

- A genre is defined by its "organization, language, intended audience and purpose".

- Genre analysis <u>identifies</u> the organization, language, intended audience and purpose of a given genre.

https://eltc-language-resources.group.shef.ac.uk/lessons/what-is-genre-analysis/

ESP Genre Analysis

- Combines genre analysis with ESP
- Inaugurated by John Swales in the '80s
- Based on the idea that "linguistic features are connected to social context and function".
- Goal of ESP Genre Analysis is to help students "grasp the system in which texts are created so that they can create similar texts, by teaching them the relationship between language and social function."
- My methodological approach in this presentation

https://en.wikipedia.org/wiki/Genre_studies

Swales' "C.A.R.S." Model for Introductions

- **Move 1: Establishing a Territory**

  Step 1: Claiming importance and/or

  Step 2: Making topic generalizations and/or

  Step 3: Reviewing items of previous research

- **Move 2: Establishing a Niche**

  Step 1a: Counter-claiming or

  Step 1b: Indicating a gap or

  Step 1c: Question-raising or

  Step 1d: Continuing a tradition

Swales' "C.A.R.S." Model for Introductions

- **Move 3: Occupying the Niche**

      Step 1a: Outlining purposes or

      Step 1b: Announcing present research

      Step 2: Announcing principle findings

      Step 3: Indicating article structure

My Simplification of Swales' Model

- Introduce the research problem

- State the importance of the problem

- Summarize how other researchers have approached the problem (background)

- Identify the research gap (what previous researchers have gotten wrong or left out)

- State purpose of your study (your intention to fill gap)

- Tell reader what methods you will use/have used

- Present a summary of your results

- Give the reader a "road map" of how your paper is organized

Our Sample Research Articles

1. Science (Oceanography)

"Modelling the Effect of Climate Change on the Wave Climate of the World's Oceans"
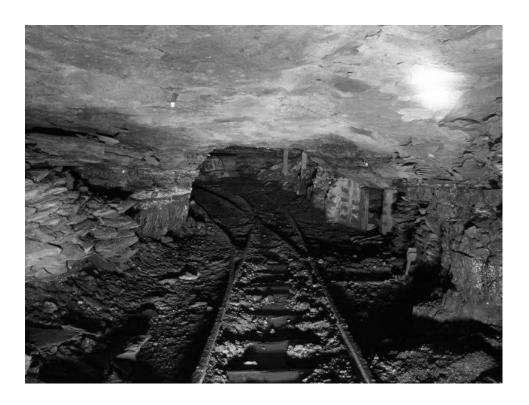
Our Sample Research Articles

2. Psychology

"Extreme re-listening: Songs people love ... and continue to love"

3. Engineering (Safety Engineering)

"A New Method for Reducing the Prevalence of Pneumoconiosis Among Coal Miners: Foam Technology for Dust Control "

Reading for the Research Problem

(broadly defined)

Reading for the Research Problem (broadly defined) in Our Engineering Article,

"A New Method for Reducing the Prevalence of Pneumoconiosis Among Coal Miners: Foam Technology for Dust Control"

In which of the introductory sentences below do we find reference to the research problem?

Q 1

1 "Given that mechanized coal mining has become increasingly popular in recent years, coal dust has become a significant problem in underground mines, causing safety hazards in coal production. **2** According to the statistics released by the Ministry of Health of China, more than 300,000 coal miners suffered from pneumoconiosis by the end of 2007, accounting for 50% of the total number of pneumoconiosis patients in China …. On average, 2500 Chinese miners die from pneumoconiosis every year."

3 A number of methods have been widely adopted in controlling coal dust concentrations. The most popular technologies are ventilation, water spraying, water infusion, water/wetting agent spraying, and dust collection using fans. (9–12) **4** Although these technologies play an important role in dust control, they have certain limitations."

In which of the introductory sentences below do we find reference to the research problem?

1 "Given that mechanized coal mining has become increasingly popular in recent years, coal dust has become a significant problem in underground mines, causing safety hazards in coal production. 2 According to the staEsEcs released by the Ministry of Health of China, more than 300,000 coal miners suffered from pneumoconiosis by the end of 2007, accounEng for 50% of the total number of pneumoconiosis paEents in China .... On average, 2500 Chinese miners die from pneumoconiosis every year."

3 A number of methods have been widely adopted in controlling coal dust concentraEons. The most popular technologies are venElaEon, water spraying, water infusion, water/wefng agent spraying, and dust collecEon using fans. (9–12) 4 Although these technologies play an important role in dust control, they have certain limitaEons."

Reading for the Research Problem
In Our Oceanography Article

"Modelling the Effect of Climate Change on the Wave Climate of the World's Oceans"

In which of the introductory sentences below do we find a statement of the research problem?

(1) "The ocean wave climate is obviously important to maritime safety, as well as many other areas of society. Ships and other marine and coastal structures are designed in order to withstand normal and extreme environmental loads imposed by the forces of wind and waves at sea. **(2)** However, the potential impact of climate change on the ocean wave climate is often neglected, and there is also a lack of knowledge on how the future ocean wave climate will change as a result of climate change. **(3)** Recently, a Bayesian hierarchical space-time model was developed to investigate long-term trends and make future projections of the ocean wave climate for an area in the North Atlantic ocean."

In which of the introductory sentences below do we find a statement of the research problem?

1 "The ocean wave climate is obviously important to mariEme safety, as well as many other areas of society. Ships and other marine and coastal structures are designed in order to withstand normal and extreme environmental loads imposed by the forces of wind and waves at sea. 2 However, the potential impact of climate change on the ocean wave climate is often neglected, and there is also a lack of knowledge on how the future ocean wave climate will change as a result of climate change. 3 Recently, a Bayesian hierarchical space-time model was developed to investigate long-term trends and make future projections of the ocean wave climate for an area in the North Atlantic ocean."

Reading for the Research Problem
in our sample Psychology article,

"Extreme re-listening: Songs people love ... and continue to love"

In which of the introductory sentences below do we find reference to the research problem?

1 People may listen to favorite songs very frequently, even though listening to familiar songs yields few surprises – and surprise has been idenEfied as one reason people find songs enjoyable (e.g., Huron, 2006). Yet, we assume listeners love the songs they listen to most o_en; otherwise it seems unlikely they would conEnue to listen to them. **2** Jakobovits (1966) demonstrated that songs played frequently on the radio and on jukeboxes in the 1960s (the 'Hit Parade') grew in popularity unEl a criEcal point when this growth reversed despite conEnued exposure. He suggests that such "exposure saturaEon" produces semanEc saEaEon–an inhibiEon in neural response due to rapid, repeated firing of neurons in response to repeated presentaEon of a sEmulus.

3 So how is it that someone like KaEe Arnold-Ratliff (2012) can listen to a song more than 400 Emes and sEll not get bored, as she describes in the epigraph? Jakobovits predicted just the opposite.

In which of the introductory sentences below do we find reference to the research problem?

1. People may listen to favorite songs very frequently, even though listening to familiar songs yields few surprises – and surprise has been idenEfied as one reason people find songs enjoyable (e.g., Huron, 2006). Yet, we assume listeners love the songs they listen to most o_en; otherwise it seems unlikely they would conEnue to listen to them.

2. Jakobovits (1966) demonstrated that songs played frequently on the radio and on jukeboxes in the 1960s (the 'Hit Parade') grew in popularity unEl a criEcal point when this growth reversed despite conEnued exposure. He suggests that such "exposure saturaEon" produces semanEc saEaEon–an inhibiEon in neural response due to rapid, repeated firing of neurons in response to repeated presentaEon of a sEmulus.

3. So how is it that someone like KaEe Arnold-Ratliff (2012) can listen to a song more than 400 Emes and sEll not get bored, as she describes in the epigraph? Jakobovits predicted just the opposite.

Summary and ReflecEon

Our sample research problem in Oceanography is to correlate climate change and ocean wave climate, and develop a predicEve model.

Our sample research problem in Engineering is to miEgate levels of coal dust in underground coal mines.

Our sample research problem in Psychology is to explain the psychological phenomenon whereby listeners repeatedly enjoy their favourite songs despite the absence of surprise.

What is a typical research problem (broadly defined) in your discipline?

If you've already begun thinking about your own research project, is the problem you intend to work on discipline-appropriate?

Reading for the Importance of the Research Problem

How to Read for the Importance of the Research Problem (broadly defined)

- They should be soluEons to the research problem, broadly defined. If they aren't, then they're something else (possibly, theory or methods borrowed from another research area).

- The risk here is confusing a previous soluEon to the research problem with the researcher's own soluEon.

Reading for the Importance of the Research Problem in Our Oceanography ArEcle,

"Modelling the Effect of Climate Change on the Wave Climate of the World's Oceans"

In which introductory sentences below do we find reference to the importance of the research problem?

1 "The ocean wave climate is obviously important to mariEme safety, as well as many other areas of society. Ships and other marine and coastal structures are designed in order to withstand normal and extreme environmental loads imposed by the forces of wind and waves at sea. 2 However, the potenEal impact of climate change on the ocean wave climate is o_en neglected, and there is also a lack of knowledge on how the future ocean wave climate will change as a result of climate change.

3 Recently, a Bayesian hierarchical space-Eme model was developed to invesEgate long-term trends and make future projecEons of the ocean wave climate for an area in the North AtlanEc ocean."

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3 Recently, a Bayesian hierarchical space-Eme model was developed to invesEgate long-term trends and make future projecEons of the ocean wave climate for an area in the North AtlanEc ocean."

Reading for the Importance of the Research Problem (broadly defined) in Our Engineering ArEcle,

"A New Method for Reducing the Prevalence of Pneumoconiosis Among Coal Miners: Foam Technology for Dust Control "

In which introductory sentences below do we find reference to the importance of the research problem?

1 "Given that mechanized coal mining has become increasingly popular in recent years, coal dust has become a significant problem in underground mines, causing safety hazards in coal producEon. 2 According to the staEsEcs released by the Ministry of Health of China, more than 300,000 coal miners suffered from pneumoconiosis by the end of 2007, accounEng for 50% of the total number of pneumoconiosis paEents in China …. On average, 2500 Chinese miners die from pneumoconiosis every year."

3 A number of methods have been widely adopted in controlling coal dust concentraEons. The most popular technologies are venElaEon, water spraying, water infusion, water/wefng agent spraying, and dust collecEon using fans. (9–12) 4 Although these technologies play an important role in dust control, they have certain limitaEons."

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Reading for the Importance of the Research Problem in our sample Psychology arEcle,

"Extreme re-listening: Songs people love ... and conEnue to love"

In which of the introductory sentences below do we find reference to the importance of the research problem?

1 People may listen to favorite songs very frequently, even though listening to familiar songs yields few surprises – and surprise has been idenEfied as one reason people find songs enjoyable (e.g., Huron, 2006). Yet, we assume listeners love the songs they listen to most o_en; otherwise it seems unlikely they would conEnue to listen to them. **2** Jakobovits (1966) demonstrated that songs played frequently on the radio and on jukeboxes in the 1960s (the 'Hit Parade') grew in popularity unEl a criEcal point when this growth reversed despite conEnued exposure. He suggests that such "exposure saturaEon" produces semanEc saEaEon–an inhibiEon in neural response due to rapid, repeated firing of neurons in response to repeated presentaEon of a sEmulus.

3 So how is it that someone like KaEe Arnold-Ratliff (2012) can listen to a song more than 400 Emes and sEll not get bored, as she describes in the epigraph? Jakobovits predicted just the opposite.

This one's a bit of a trick quesEon

- Some research problems in some disciplines do not call for an explicit jusEficaEon in terms of their importance. In the present case, for instance, explaining the psychological phenomenon of "extreme re-listening" is considered inherently worthwhile.

- AMempts to aMach pracEcal importance to the research (e.g. for the insights into musical consumpEon that it affords music-industry marketers) is unnecessary and even misguided.

Summary and ReflecEon

The importance of the problem in Oceanography (lack of info on future wave-ocean climate) is that it may compromise mariEme safety.

The importance of the problem in Engineering (high coal-dust levels) is health and safety-related as well as economic.

The importance of the problem in Psychology (unexplained phenomenon of extreme re-listening) is implicit. Human psychology is considered inherently interesEng.

What importance aMaches to research problems (broadly defined) in your discipline?

If you've already begun thinking about your own research project, what is the importance of the research problem (broadly defined) that you are or will be working on?

Reading for Previous Solutions to the Problem

How to Read for Previous SoluEons

- They are usually expressed in the past tense, and cite another researcher's work.

- They should be soluEons to the research problem, broadly defined. If they aren't, then they're something else (possibly, references to theory or methods borrowed from another research area).

- The risk here is confusing a previous soluEon to the research problem with the researcher's own soluEon.

Reading for Previous SoluEons
in our sample psychology arEcle,

"Extreme re-listening: Songs people love ... and conEnue to love"

In which of the introductory sentences below do we find reference to previous soluEons?

1. People may listen to favorite songs very frequently, even though listening to familiar songs yields few surprises – and surprise has been idenEfied as one reason people find songs enjoyable (e.g., Huron, 2006). Yet, we assume listeners love the songs they listen to most o_en; otherwise it seems unlikely they would conEnue to listen to them. 2. Jakobovits (1966) demonstrated that songs played frequently on the radio and on jukeboxes in the 1960s (the 'Hit Parade') grew in popularity unEl a criEcal point when this growth reversed despite conEnued exposure. He suggests that such "exposure saturaEon" produces semanEc saEaEon—an inhibiEon in neural response due to rapid, repeated firing of neurons in response to repeated presentaEon of a sEmulus.

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Reading for Previous SoluEons
in Our Engineering ArEcle,

"A New Method for Reducing the Prevalence of Pneumoconiosis
Among Coal Miners: Foam Technology for Dust Control "

In which of the introductory sentences below do we find reference to previous soluEons?

(1) "Given that mechanized coal mining has become increasingly popular in recent years, coal dust has become a significant problem in underground mines, causing safety hazards in coal producEon. (2) According to the staEsEcs released by the Ministry of Health of China, more than 300,000 coal miners suffered from pneumoconiosis by the end of 2007, accounEng for 50% of the total number of pneumoconiosis paEents in China …. On average, 2500 Chinese miners die from pneumoconiosis every year."

(3) A number of methods have been widely adopted in controlling coal dust concentraEons. The most popular technologies are venElaEon, water spraying, water infusion, water/wefng agent spraying, and dust collecEon using fans. (9–12) (4) Although these technologies play an important role in dust control, they have certain limitaEons."

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Reading for Previous SoluEons
in Our Oceanography ArEcle,

"Modelling the Effect of Climate Change on the
Wave Climate of the World's Oceans"

In which of the introductory sentences below do we find a reference to previous soluEons?

1 "Recently, a Bayesian hierarchical space-Eme model was developed to invesEgate long-term trends and make future projecEons of the ocean wave climate for an area in the North AtlanEc ocean. 2 In Vanem et al. (2012a) the iniEal model is presented and a revised model with a logarithmic transformaEon of the data is presented in Vanem et al. (2012b)...."

3 Furthermore, it is demonstrated in Vanem and Bitner-Gregersen (2012) how esEmated trends and future projecEons can be taken into account in calculaEons of ship structural loads and responses and it was suggested that these trends are not negligible."

In which of the introductory sentences below do we find a reference to previous soluEons?

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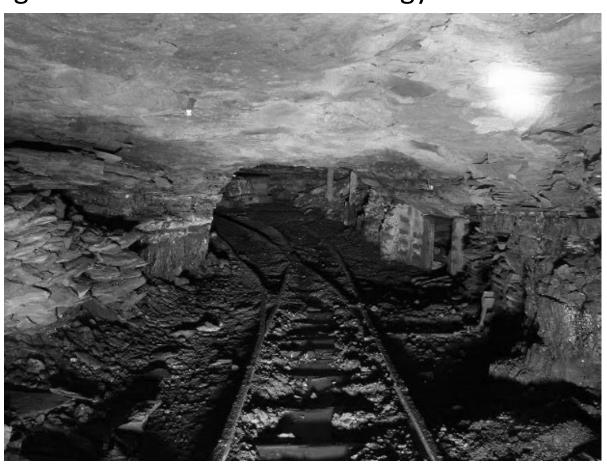
Reading for Limitations of Previous Solutions

also known as the Research Gap

How to Read for the LimitaEons of Previous SoluEons

- If previous soluEons to the research problem (broadly defined) were sufficient, there would be no jusEficaEon for the current research.

Reading for LimitaEons of Previous SoluEons in Our Engineering ArEcle,

"A New Method for Reducing the Prevalence of Pneumoconiosis Among Coal Miners: Foam Technology for Dust Control "

In which of the introductory sentences below do we find reference to the limitaEons of previous soluEons?

1. According to the staEsEcs released by the Ministry of Health of China, more than 300,000 coal miners suffered from pneumoconiosis by the end of 2007, accounEng for 50% of the total number of pneumoconiosis paEents in China."

2. A number of methods have been widely adopted in controlling coal dust concentraEons. The most popular technologies are venElaEon, water spraying, water infusion, water/wefng agent spraying, and dust collecEon using fans.

3. Although these technologies play an important role in dust control, they have certain limitaEons. For instance, water infusion requires complicated equipment and a considerable amount of water. Water spray nozzles are easily blocked, thereby reducing the dust precipitaEon raEo. Dust collecEng fans have an equipment structure that is complicated….

In which of the introductory sentences below do we find reference to the limitaEons of previous soluEons?

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Reading for LimitaEons of Previous SoluEons in Our Oceanography ArEcle,

"Modelling the Effect of Climate Change on the Wave Climate of the World's Oceans"

In which of the introductory sentences below do we find a reference to limitaEons of previous soluEons?

1 Recently, a Bayesian hierarchical space-Eme model was developed to invesEgate long-term trends and make future projecEons of the ocean wave climate for an area in the North AtlanEc ocean. **2** In Vanem et al. (2012a) the iniEal model is presented and a revised model with a logarithmic transformaEon of the data is presented in Vanem et al. (2012b)….." **3** Furthermore, it is demonstrated in Vanem and Bitner-Gregersen (2012) how esEmated trends and future projecEons can be taken into account in calculaEons of ship structural loads and responses and it was suggested that these trends are not negligible. **4** However, all previous results pertain to a specific area in the North AtlanEc ocean…."

In which of the introductory sentences below do we find a reference to limitations of previous solutions?

1 Recently, a Bayesian hierarchical space-time model was developed to investigate long-term trends and make future projections of the ocean wave climate for an area in the North Atlantic ocean. **2** In Vanem et al. (2012a) the initial model is presented and a revised model with a logarithmic transformation of the data is presented in Vanem et al. (2012b)...." **3** Furthermore, it is demonstrated in Vanem and Bitner-Gregersen (2012) how estimated trends and future projections can be taken into account in calculations of ship structural loads and responses and it was suggested that these trends are not negligible. **4** However, all previous results pertain to a specific area in the North Atlantic ocean...."

Reading for LimitaEons of Previous SoluEons in our sample psychology arEcle,

"Extreme re-listening: Songs people love … and conEnue to love"

In which of the introductory sentences below do we find reference to the limitaEons of previous soluEons?

1. Jakobovits (1966) demonstrated that songs played frequently on the radio and on jukeboxes in the 1960s (the 'Hit Parade') grew in popularity unEl a criEcal point when this growth reversed despite conEnued exposure. He suggests that such "exposure saturaEon" produces semanEc saEaEon—an inhibiEon in neural response due to rapid, repeated firing of neurons in response to repeated presentaEon of a sEmulus.

2. So how is it that someone like KaEe Arnold-Ratliff (2012) can listen to a song more than 400 Emes and sEll not get bored, as she describes in the epigraph? Jakobovits (1966) predicted just the opposite.... 3. What might account for the difference in her experience from that of listeners contribuEng to the Hit Parade in the 1960s? Is Arnold-Ratliff's experience an extreme case or an example of a different phenomenon than Jakobovits examined?

In which of the introductory sentences below do we find reference to the limitaEons of previous soluEons?

1. Jakobovits (1966) demonstrated that songs played frequently on the radio and on jukeboxes in the 1960s (the 'Hit Parade') grew in popularity unEl a criEcal point when this growth reversed despite conEnued exposure. He suggests that such "exposure saturaEon" produces semanEc saEaEon–an inhibiEon in neural response due to rapid, repeated firing of neurons in response to repeated presentaEon of a sEmulus.

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3. What might account for the difference in her experience from that of listeners contribuEng to the Hit Parade in the 1960s? Is Arnold-Ratliff's experience an extreme case or an example of a different phenomenon than Jakobovits examined?

To sum up, the limitaEons of previous soluEons may include (but are by no means limited to):

- PracEcal limitaEons of previous soluEons (in this case, dust-reducEon technologies)
- LimitaEons in scope (in this case, geographical scope) of previous soluEons
- Inability of previous soluEons to account for a new phenomenon (in this case, extreme re-listening)
- What are typical research gaps in your own discipline?

Reading for How the (Possibly Redefined) Problem Will Be Solved

also known as Methods, Materials

Reading for How the Problem Will Be Solved in Our Oceanography ArEcle,

"Modelling the Effect of Climate Change on the Wave Climate of the World's Oceans"

In which of the sentences below do we find a descripEon of how the problem will be solved?

1 Recently, a Bayesian hierarchical space-Eme model was developed to invesEgate long-term trends and make future projecEons of the ocean wave climate for an area in the North AtlanEc ocean. In Vanem et al. (2012a) the iniEal model is presented and a revised model with a logarithmic transformaEon of the data is presented in Vanem et al. (2012b)…. **2** However, all previous results pertain to a specific area in the North AtlanEc ocean, and **3** in this paper, it will be invesEgated how the model performs on 11 alternaEve areas of the world's oceans. EsEmated long-term trends and future projecEons towards the year 2100, obtained by the … model, will be presented for the following ocean areas:"

In which of the sentences below do we find a description of how the problem will be solved?

(1) Recently, a Bayesian hierarchical space-time model was developed to investigate long-term trends and make future projections of the ocean wave climate for an area in the North Atlantic ocean. In Vanem et al. (2012a) the initial model is presented and a revised model with a logarithmic transformation of the data is presented in Vanem et al. (2012b).... **(2)** However, all previous results pertain to a specific area in the North Atlantic ocean, and **(3)** in this paper, it will be investigated how the model performs on 11 alternative areas of the world's oceans.

(4) Estimated long-term trends and future projections towards the year 2100, obtained by the ... model, will be presented for the following [11] ocean areas:"

Reading for How the Problem Will Be Solved in Our Engineering ArEcle,

"A New Method for Reducing the Prevalence of Pneumoconiosis Among Coal Miners: Foam Technology for Dust Control "

In which of the sentences below do we find a descripEon of how the problem will be solved?

1. "Water infusion requires complicated equipment and a considerable amount of water. Water spray nozzles are easily blocked, thereby reducing the dust precipitaEon raEo. Dust collecEng fans have an equipment structure that is complicated. These devices also require substanEal wind power, but the environment in underground coal mines constrains the use of such equipment.

2. To overcome the limitaEons of tradiEonal methods, the authors developed a foam technology to effecEvely control coal dust levels. 3 PracEcal applicaEon showed that airborne coal dust was efficiently controlled by foam technology; therefore, the proposed technology presents promising applicaEon prospects in the coal mining industry.

In which of the sentences below do we find a descripEon of how the problem will be solved?

1 "Water infusion requires complicated equipment and a considerable amount of water. Water spray nozzles are easily blocked, thereby reducing the dust precipitaEon raEo. Dust collecEng fans have an equipment structure that is complicated. These devices also require substanEal wind power, but the environment in underground coal mines constrains the use of such equipment.

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Reading for How the (Newly Defined) Problem Will Be Solved
in our sample Psychology arEcle,

"Extreme re-listening: Songs people love … and conEnue to love"

In which of the sentences below do we find a descripEon of how the problem will be solved?

1 So how is it that someone like KaEe Arnold-Ratliff (2012) can listen to a song more than 400 Emes and sEll not get bored, as she describes in the epigraph? What might account for the difference in her experience from that of listeners contribuEng to the Hit Parade in the 1960s? Is Arnold-Ratliff's experience an extreme case or an example of a different phenomenon than Jakobovits examined?

2 One possibility is that, unlike most radio listeners in the 1960s, most listeners today, including Arnold-Ratliffe, have access to their favorite songs at all Emes ... affording them the Eme to become deeply acquainted with and connected to such songs…. 3 The main quesEon we focus on is how listeners can intenEonally listen to the same song over and over, without losing interest. 4 To this end, we examine the behaviors and emoEonal states that accompany extreme re-listening, primarily through self-reports in response to quesEons in a survey.

In which of the sentences below do we find a descripEon of how the problem will be solved?

1. "So how is it that someone like KaEe Arnold-Ratliff can listen to a song more than 400 Emes and sEll not get bored, as she describes in the epigraph? What might account for the difference in her experience from that of listeners contribuEng to the Hit Parade in the 1960s? Is Arnold-Ratliff's experience an extreme case or an example of a different phenomenon than Jakobovits examined?

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Reading for the Solution

How to Read for the SoluEon

- Look for a sentence in the results secEon or the conclusion that clearly arEculates the soluEon to the research problem you idenEfied earlier, and which expresses (in the sentence itself or nearby) the value of that soluEon in terms of the importance of the problem it solves and its filling of the research gap.

Reading for the SoluEon
in our sample psychology arEcle,

"Extreme re-listening: Songs people love … and conEnue to love"

In which of the sentences below do we find a clear arEculaEon of the soluEon to the research problem?

1 "People's relaEonships with their favorite songs seem to be individualized and idiosyncraEc, in contrast to the mass popularity of hit songs invesEgated by Jakobovits (1966). In the current study, it is likely that listeners' iniEal exposure was more serendipitous (…only about 6% of the 189 unique songs were in the music charts at the Eme of the study) and their conEnued exposure was more deliberate, i.e., listeners chose when to expose themselves to the parEcular song that was their favorite…. **2** This individualized listening experience is an example of what Anderson (2009) calls the 'long tail,' i.e., the transiEon in the digital era from a small no. of hits (determined by industry "taste makers") to a vast no. of niches (each driven by a small no. of individuals). **3** Niche listening may enable listeners to develop the kind of personally meaningful relaEonships with parEcular songs that allows their affecEon for those songs to persist across very large amounts of exposure."

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Reading for the (Efficacy of the) SoluEon to the Research Problem in Our Engineering ArEcle,

"A New Method for Reducing the Prevalence of Pneumoconiosis Among Coal Miners: Foam Technology for Dust Control "

In which of the sentences below do we find a clear articulation of the solution to the research problem?

1 This was the first time that dust control foam technology was applied in an underground coal mine. 2 In return-airway of the workface, three measuring points were set near the fully mechanized coal mining machine. [A] digital conimeter was used to measure the dust in air when using the foam and spray technology…. 3 Figures 12 and 13 show the contras-tive histogram of the dust control efficiency levels for total dust and respirable dust, respectively, a_er the adoption of foam and spray technology. [4 T]he efficiency levels of foam technology for total dust and respirable dust were 2.11 and 1.72 times, respectively, that achieved with water spraying. The application of the dust control foam technology effec-tively reduced dust concentration at the mechanized work-face …. indicating promising implications for the health and safety of the miners.

In which of the sentences below do we find a clear articulation of the solution to the research problem?

1 This was the first time that dust control foam technology was applied in an underground coal mine. **2** In return-airway of the workface, three measuring points were set near the fully mechanized coal mining machine. [A] digital conimeter was used to measure the dust in air when using the foam and spray technology.... **3** Figures 12 and 13 show the contrastive histogram of the dust control efficiency levels for total dust and respirable dust, respectively, after the adoption of foam and spray technology. **[4** [T]he efficiency levels of foam technology for total dust and respirable dust were 2.11 and 1.72 times, respectively, that achieved with water spraying. The application of the dust control foam technology effectively reduced dust concentration at the mechanized workface .... indicating promising implications for the health and safety of the miners.

Reading for the SoluEon
in Our Oceanography ArEcle,

"Modelling the Effect of Climate Change on the
Wave Climate of the World's Oceans"

In which of the sentences below do we find a clear articulation of the solution to the research problem?

1 "According to the results obtained ... most of the investigated areas, except perhaps two, are expected to experience a trend towards rougher ocean wave climate towards 2100 .... **2** Qualitatively, the fact that the ocean wave climate is expected to be rougher is in agreement with many previous studies on future wave climate changes, but there is great uncertainty as to how large future changes will be. **3** Nevertheless, it is believed that the results presented herein, estimating future trends in the wave climate pertaining to several ocean areas around the globe ... is an important contribution ... in this important area, with important implications for maritime and coastal safety."

In which of the sentences below do we find a clear arEculaEon of the soluEon to the research problem?

(1) "According to the results obtained … most of the invesE-gated areas, except perhaps two, are expected to experi-ence a trend towards rougher ocean wave climate towards 2100 …. (2) QualitaEvely, the fact that the ocean wave climate is expected to be rougher is in agreement with many previous studies on future wave climate changes, but there is great uncertainty as to how large future changes will be. (3) Nevertheless, it is believed that the results presented herein, esEmaEng future trends in the wave climate pertaining to several ocean areas around the globe … is an important contribuEon … in this impor-tant area, with important implicaEons for mariEme and coastal safety."

Reading for the Solution's Limitations

a.k.a. Research Limitations

How to Read for the SoluEon's LimitaEons

- Usually found in the Results or Analysis secEon

- It's a statement that acknowledges some weakness in an aspect of the research—essenEally, an anEcipaEon of readers' possible objecEons to the validity of its conclusions. An anEcipaEon, in other words, of its own "research gap."

- Like all anEcipaEons of readers' possible objecEons, it is a rhetorical device meant to make an argument more persuasive.

Reading for the SoluEon's LimitaEons in Our Oceanography ArEcle,

"Modelling the Effect of Climate Change on the Wave Climate of the World's Oceans"

In which of the sentences below do we find an acknowledgment of the soluEon's limitaEons?

1 "The model presented in this paper, uses the stochasEc relaEonship between level of CO2 in the atmosphere and significant wave height. **2** It is acknowledged that this is a simplificaEon, and that there are several mechanisms in between that has [sic] not been modelled directly. For example, ocean waves are generated by winds (Janssen and Viterbo 1996), which are again results of air pressure gradients. **3** A more refined model could include several levels of explanatory variables, including wind fields and fields of sea level pressures as well as other meteoro-logical variables. This has not been tried out to date, and remain possible alternaEves for model extenEon [sic].

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Reading for the SoluEon's LimitaEons in Our Engineering ArEcle,

"A New Method for Reducing the Prevalence of Pneumoconiosis Among Coal Miners: Foam Technology for Dust Control "

No limitaEons are acknowledged in our sample Engineering arEcle.

It is difficult to say whether this absence is common In Engineering research arEcles, but it may reflect the relaEvely greater control engineers have over research parameters.

Reading for the SoluEon's LimitaEons
in our sample psychology arEcle,

"Extreme re-listening: Songs people love … and conEnue to love"

In which of the sentences (or phrases) below do we find an acknowledgment of the soluEon's limitaEons?

(1) "Pop songs are generally easy to listen to for the first Eme, and as Frith (2007) says, pop music "is designed to appeal to everyone" (p. 169), but we propose that unless they reveal new features and layers and take on new meaning with repeated listening, listeners will eventually lose interest consistent with the Hit Parade trajectory observed by Jakobovits (1966). (2) Consider the experience of this listener in the current study: "The song Etle is, Royals, by Lorde. As soon as I heard it, I liked it. At the Eme the song had a more alternaEve feel to it. But now, I hear it all the Eme on the radio and does not have the appeal it did when I first heard it." (3) The evoluEon of listeners' emoEonal reacEon to songs they love deserves addiEonal research, likely conducted longitudinally (4) rather than through the cross-secEonal approach used in the current study.

In which of the sentences (or phrases) below do we find an acknowledgment the soluEon's limitaEons?

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Reading for Suggestions for Further Research

How (and Why) to Read for SuggesEons for Further Research

- The suggesEons for further research o_en follow immediately on acknowledgment of the soluEon's (i.e., the research's) limitaEons.

- If you're in a discipline where you get to choose (and therefore have to find) your research problem, suggesEons for further research are a good place to look.

Reading for Suggestions for Further Research in our sample psychology article,

"Extreme re-listening: Songs people love ... and continue to love"

In which of the sentences (or phrases) below do we find a suggesEon for further research?

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Another suggesEon for further research

① "Kivey (1990) argues that a song can create feelings in listeners that are simultaneously mournful (negaEve) and moving (posiEve). Some listeners in the current study arEculated this kind of experience, e.g, "It makes me feel emoEonal, with mixed feelings, beauty and biMersweet at the same Eme." And other listeners seem to directly experience different feelings on different listening occasions: "The song makes me happy someEmes, but sad other Emes." ② It's possible that some listeners experience mixed emoEons directly from the musical sEmulus while for others the different emoEons have disEnct origins. Our data – open responses, provided retrospecEvely – cannot definiEvely address this. ③ Follow-up research with real-Eme measures may shed light on this issue.

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Reading for SuggesEons for Further Research in Our Engineering ArEcle,

"A New Method for Reducing the Prevalence of Pneumoconiosis Among Coal Miners: Foam Technology for Dust Control "

No suggesEons for further research are offered in our sample Engineering arEcle.

Given the frequent connecEon between acknow-ledged research limitaEons and suggesEons for further research, this absence is perhaps not sur-prising.

Reading for SuggesEons for Further Research in Our Oceanography ArEcle,

"Modelling the Effect of Climate Change on the Wave Climate of the World's Oceans"

In which of the sentences below do we find a suggesEon for further research?

1 "The model presented in this paper, uses the stochasEc relaEonship between level of CO2 in the atmosphere and significant wave height. 2 It is acknowledged that this is a simplificaEon, and that there are several mechanisms in between that has [sic] not been modelled directly. For example, ocean waves are generated by winds (Janssen and Viterbo 1996), which are again results of air pressure gradients. 3 A more refined model could include several levels of explanatory variables, including wind fields and fields of sea level pressures as well as other meteoro-logical variables. This has not been tried out to date, and remain possible alternaEves for model extenEon [sic].

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Ar$cle $tle	Research Problem (b.d.)	Importance of Research Problem (broadly defined)	Previous Solu$ons	Limita$ons of Previous Solu$ons	New Approach to Problem
A New Method for … Among Coal Miners: Foam Technology for Dust Control. Xing W. Ren et al.	Popularity of mechanized coal produc-Eon has led to hazardous levels of coal dust in mines	High number of Chinese coal miners die of pneumoconiosis annually.	Water spraying, water infusion, dust collecEon using fans	Spray nozzles easily blocked, infusion requires a lot of water, fans require complicated equipment	Development of a foam technology
Modelling the Effect of Climate Change on the Wave Climate of the World's Oceans. Vanem, Natvig, et al.	How will climate change affect future ocean-wave climate?	MariEme safety. Ships and other coastal structures may not be designed to withstand future ocean-wave climate.	A Bayesian hierarchical space-Eme model projected ocean wave climate in an area of the North AtlanEc Ocean	Previous results pertain only to the one area in the North AtlanEc Ocean.	Bayesian hierarchical space-Eme model will be applied to 11 new ocean areas
Extreme re-listening: Songs people love… and conEnue to love. Conrad, Corey, et al.	Unexplained phenomenon: "extreme re-listening enjoyable despite lack of surprise	(implied) Study of human psychological phenomena inherently worthwhile	Jakobovits (1966) studied repeat listening to 'Hit Parade'. Found increasing enjoy-ment, then decline due to 'semanEc saEaEon.'	Jakobovits' theory can't explain conE-nued enjoyment in 'extreme re-listening'. He predicts the opposite effect.	Examine beha-viors and emo-Eonal states that accom-pany extreme re-listening thru self-reports in response to

Ar$cle $tle	The Solu$on	Acknowledgment of the Solu$on's Limita$ons	Sugges$ons for Further Research		
A New Method for … Among Coal Miners: Foam Technology for Dust Control. Xing W. Ren et al.	Foam tech-nology proved more effica-cious than old methods at reducing coal dust.	No limitaEons acknowledged.	No suggesEons given		
Modelling the Effect of Climate Change on the Wave Climate of the World's Oceans. Vanem, Natvig, et al.	9 of 11 invesEgated ocean areas will experience rougher wave climate as a result of climate change	Model's stochasEc rela-Eonship btw CO2 and wave height a simpli-ficaEon. Other mechanisms in between	More refined model could include wind fields, fields of sea level pressures and other meteoro-logical variables.		
Extreme re-listening: Songs people love… and	"niche listen-ing" in digital era allows for personal rela-	Cross-secEonal approach can't capture the evoluEon of listeners' emoEonal	The evoluEon of listeners' emoEonal reacEons to songs		

Questions?

Thanks for Joining Us!

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