THE USC WRITING CENTER PRESENTS...

THE NOVELTY MOVES:
Explanation the Originality of Your Research in the Academy, on the Job Market, and Beyond

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This workshop for graduate students presents four rhetorical “moves” that communicate why and how your work is an essential contribution to your field. These well-established moves can help you structure a job letter, a dissertation introduction, a conference presentation, or a literature review of journal articles and papers. While the method is applicable to graduate students in any discipline, these moves will be particularly helpful to students in STEM fields.
We need to be able to articulate the relevance of our work

- Appealing to diverse audiences
- Applying for funding
- Promoting ourselves and our work
A. The long-term goal of this project is to analyze neural signals collected from the human brain and use these signals to build a brain computer interface (BCI). BCI aims to provide a direct control pathway from the brain to external devices such as a computer. It is a radically new communication option for those with neuromuscular impairments that prevent them from using conventional augmentative communication methods. In this project, I will develop an application programming interface (API) to extract electroencephalography (EEG) signals collected by a commercial headset.

B. Neural disorders can disrupt the brain’s neuromuscular channels making communication impossible for those affected. One radically new communication option for those with neuromuscular impairments is the brain computer interface (BCI). BCI aims to provide a direct control pathway from electroencephalography (EEG) signals in the brain to external devices such as a computer. Currently no programming tools exist to aid researchers in encoding and interpreting commands embedded in EEG signals. Thus, the goal of this project is to develop an application programming interface (API) for translating EEG signals into specific commands that can assist researchers in developing BCIs.
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B. Neural disorders can disrupt the brain’s neuromuscular channels making communication impossible for those affected. One radically new communication option for those with neuromuscular impairments is the brain computer interface (BCI). BCI aims to provide a direct control pathway from electroencephalography (EEG) signals in the brain to external devices such as a computer. However, currently no programming tools exist to aid researchers in encoding and interpreting commands embedded in EEG signals. Thus, the goal of this project is to develop an application programming interface (API) for translating EEG signals into specific commands that can assist researchers in developing BCIs.

This example is based on an ECE research project conducted by CMU students, available on the CMU website.
Why is B easier to understand?
Workshop Overview

1. Introducing the 4 “Novelty Moves”
2. Identifying the Novelty Moves
3. Adapting the Novelty Moves
4. Applying the Novelty Moves
I. Introducing the 4 “Novelty Moves”
There are three basic types of research

<table>
<thead>
<tr>
<th>Experimental</th>
<th>Problem/Solution</th>
<th>Theory-Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What is the exact mechanism causing the fishhook effect for particle separation?</td>
<td>• Can we improve fault analysis in reactors with support vector machines?</td>
<td>• How can we better understand the role of nostalgia in forging immigrant identities?</td>
</tr>
<tr>
<td>• What happens to particles sent through an inhomogeneous magnetic field?</td>
<td>• Can the GAB model be improved by adding a fourth constant?</td>
<td>• How are 19\textsuperscript{th} C discourses of sexuality and animality related?</td>
</tr>
<tr>
<td>• What risk do hurricanes present to offshore wind farms?</td>
<td>• Can we develop sodium-ion batteries to provide a cost-effective means for long-term energy storage?</td>
<td>• Can we develop a framework for understanding creativity that can help us develop UI tools to support creative processes?</td>
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<tr>
<td>• Do men and women use metaphors differently in speech?</td>
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</tbody>
</table>
All three types move from BROAD to narrow back to BROAD
Research in most fields tells a similar research story

There’s a compelling need for more research on this!

So, here’s what we did

And here’s what we found

And here’s what it means
Introductions need to tell a particularly compelling story

There's a compelling need for more research on this!

So, here's what we did

And here's what we found

And here's what it means
Unfortunately, the introduction is often the hardest—yet most critical—part of the project to write.

Because we often struggle to situate our research within its broader contexts.
Fortunately, linguists have analyzed the introductions of published articles and revealed consistent patterns or “moves”
We call these moves the “Novelty Moves”

1. Explain the Significance
   - Why should a wider audience care?
   - How are people being affected?
   - What’s the real world context?

2. Describe the Status Quo
   - What is currently known?
   - What are people doing to address the issue?

3. Identify a “Gap”
   - What is the problem?
   - What is missing or unknown?
   - What is the flaw?

4. Fill the Gap
   - How does my work solve the problem?
   - How does my work address the issue in a new way?
   - How does my work extend or develop current knowledge?

*Based on the work of John Swales*
Neural disorders can disrupt the brain’s neuromuscular channels making communication impossible for those affected.

One radically new communication option for those with neuromuscular impairments is the brain computer interface (BCI). BCI aims to provide a direct control pathway from electroencephalography (EEG) signals in the brain to external devices such as a computer.

However, currently no programming tools exist to aid researchers in encoding and interpreting commands embedded in EEG signals.

Thus, the goal of this project is to develop an application programming interface (API) for translating EEG signals into specific commands that can assist researchers in developing brain computer interfaces.
What does it mean, and what does it take, to keep a work identity alive? Scholars have investigated identity work in organizational contexts characterized by strong cultures, tight communities, and strict display rules, showing how people strive to fit into demanding roles without losing their individuality. Economic volatility and technological change, however, have led more people to work outside such strong contexts as independent workers loosely connected to organizations or selling directly to the market. For these workers, the availability of institutionalized frameworks to orient their identity work is, at best, elusive. Thus, we conducted a qualitative study of independent workers who were facing chronic uncertainty about the stability and meaning of their work identities.

2. Identifying the “Novelty Moves”
### Unscramble this introduction

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Thus, to increase the sparkles available for unicorn consumption, this paper presents a model for developing hydroponic sparkle gardens from which sparkles can be harvested and used to maintain the flying capabilities of the unicorns we’ve come to rely on.</td>
</tr>
<tr>
<td>B</td>
<td>Researchers have recently discovered that this flying ability depends on unicorns’ access to sparkles, which are a naturally occurring within enchanted forests.</td>
</tr>
<tr>
<td>C</td>
<td>Unicorns’ ability to fly provides humans with the previously unknown joy of visiting mountaintops, cloudscapes, and the ends of rainbows.</td>
</tr>
<tr>
<td>D</td>
<td>However, because enchanted forests (and consequently sparkles) are becoming scarce due to changes in the global climate, unicorns are in increasingly in danger of losing their ability to fly.</td>
</tr>
</tbody>
</table>
A “correct” order:

C
B
D
A
Unscramble this introduction

| A | How organisms learn the value of single stimuli through experience is well described. In many decisions, however, value estimates are computed “on the fly” by combining multiple stimulus attributes. |
| B | Here we explore a common scenario in which decision-makers must combine information about quality and quantity to determine the best option. |
| C | Many choices we make each day require us to weigh up the quality and quantity of different outcomes. |
| D | The neural basis of this computation is poorly understood. |

A “correct” order:

- C
- A
- D
- B
Can you identify each of the Novelty Moves in “Example 3” on the handout?
Although plastic has revolutionized modern life, traditional petroleum plastics have a staggering impact on the environmental. Bioplastics, an alternative to petroleum plastics, may be a more sustainable option because they use fewer fossil fuels in production and reduce greenhouse gas emissions as they biodegrade. One particularly promising bioplastic is polylactic acid (PLA), which resembles traditional plastic and can be processed on equipment already used for petroleum plastics.

However, the commercial viability of PLA is currently limited because it can only be composted in industrial facilities and cannot be mixed with other recyclable materials [1, 2]. To make PLA more commercially viable, we develop a device that comports PLA and other bioplastics within a home composting environment [3]. Such a device, we argue, encourages the production of more sustainable and economic bioplastics.

Example adapted from: https://www.cmu.edu/gcc/handouts-and-resources/novelty-moves-handout.pdf
4. Adapting the Novelty Moves
The flexibility of the Novelty Moves makes them widely applicable.
I. Flexible in arrangement
A. Combining the Moves
Major depressive disorder (MDD) is a **common** and debilitating condition that **contributes significantly** to **global disease burden**. Anhedonia is a core symptom of depression, **but** the underlying neurobiological mechanisms are **unknown**. Correlative neuroimaging **studies implicate** dysfunction within ventromedial prefrontal cortex, **but** the causal roles of specific subregions remain **unidentified**. We **addressed** these issues by combining intracerebral microinfusions with cardiovascular and behavioral monitoring in marmoset monkeys to show that over-activation of primate subgenual anterior cingulate cortex (sgACC, area 25) blunts appetitive anticipatory, but not consummatory, arousal, whereas manipulations of adjacent perigenual ACC (pgACC, area 32) have no effect.

B. Rearranging the Moves
The literature on undergraduate women in engineering is rife with situations in which women face major problems in team projects and other interactions outside of class but have no good strategies for resolving these problems.

This project is based upon the theory that women who have been successful in engineering schools and workplaces have developed tacit knowledge (assumptions, habits, and strategies that individuals know but usually cannot articulate explicitly) about how to interact successfully in this environment. The goal of this project is to tap into this tacit knowledge and bring it to the surface where it can serve as a resource for young women and girls just entering engineering and similar male-dominated fields.
C. Omitting a Move (with caution)
Theories of public policy change, despite their differences, converge on one point of strong agreement: the relationship between policy and its causes can and does change over time. This consensus yields numerous empirical implications, but our standard analytical tools are inadequate for testing them. As a result, the dynamic and transformative relationships predicted by policy theories have been left largely unexplored in time series analysis of public policy. This article introduces dynamic linear modelling (DLM) as a useful statistical tool for exploring time-varying relationships in public policy.

Laws restricting the behaviors of homeless people in public places are proliferating. Proponents argue that such “quality of life” laws will encourage homeless people to move off the streets and into services, and thereby improve their quality of life. Critics argue that these laws target vulnerable individuals and show little evidence of improving the lives of homeless people. To inform this debate, this article reports data from two separate surveys of Colorado homeless residents regarding their experiences with quality of life policing, supplemented by a review of police data regarding contacts, ticketing, and arrests of homeless people.

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D. Adding to the Moves

The “big gap, little gap” arrangement is a common variation when research is very specific
Research on the British colonial state has been thriving and scholars have been assiduous in suggesting theories of its nature and its relationship to the legal and political structures of Western imperial modernity. However, historians have generally limited their inquiries to the “fiscal-military state,” as John Brewer famously dubbed it. Scholars generally agree that this imperial state helped forge some of the unique capacities of modern statehood and contributed to British domination in the eighteenth century war for trade and empire. What remains striking is that the cultural intimations and practices of state-building, tend to escape sustained attention. This project helps revivify a cultural perspective on the arts and strategies of colonial state-making in the eighteenth century by examining the practices of governance in three frontiers of the British empire—Fort Marlborough (Sumatra), St. Helena, and Jamaica.

Example adapted from: https://www.cmu.edu/gcc/handouts-and-resources/novelty-moves-handout.pdf
2. Flexible in length
The moves can be **contracted** to fit within your abstract.
Abstract

Despite the exponentially rising amount of radio transmitters, currently no transmitter identification techniques exist that can handle the common transmitting problems of conflicting signals and poor DTV reception. To mitigate this problem, we propose a TxID technique that can identify multiple transmitters and weak interference sources, independent of the DTV reception. We explain the development of this technique and establish the new Hessian analysis to derive the constraint of the injection level. Our novel robust least-square TxID scheme is found to greatly outperform the conventional cross-correlation based approach. Through Monte Carlo simulations, the fingerprinting technique is demonstrated to be very robust when reducing multipath distortion generated by neighboring transmitters in an SFN. Such a technique would enable broadcast authorities and operators to identify the source of in-band interference in some coverage overlapped areas. (130 words)
The length of these “moves” will depend on where you’re using them.

250 word novelty moves – as the first paragraph of an introduction.
The moves can be expanded to several paragraphs (or pages) in your introduction.

500-word novelty moves (within an intro)
3. Adaptable to situations and genres
5. Practice with your own research
Your turn: apply the novelty moves to your current work or a recent project

1. For the next few minutes, brainstorm about how these moves apply to your work (approx. one sentence per move – write them down!)

2. In pairs, try your “blurb” out.
   Partner: listen to and critique blurb, offering insight into:
   a) what was clear
   b) what was confusing
   c) is it compelling?
### Academic Phrases for the Novelty Moves

<table>
<thead>
<tr>
<th>Significance</th>
<th>Status Quo</th>
<th>Gap</th>
<th>Fill Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>-X project is important because...</td>
<td>-Prior research has shown that...</td>
<td>-However, the commercial viability of X is currently limited because...</td>
<td>-This paper describes a new solution for...</td>
</tr>
<tr>
<td>-This work investigates modern concerns with...</td>
<td>-The most-used method for investigating this problem is...</td>
<td>-Although X practice has been used widely, it inadequately addresses...</td>
<td>-We offer a novel approach to...</td>
</tr>
<tr>
<td>-X significantly impacts...</td>
<td>-Previous studies have evaluated...</td>
<td>-Whereas research has shown X, it has largely overlooked Y...</td>
<td>-The goal of this paper is to explore a new theory about...</td>
</tr>
<tr>
<td>-Due to an ever-increasing number of...</td>
<td>-X process has been described as...</td>
<td>-While current findings are promising, more research is needed because...</td>
<td>-Here, we investigate the previously unstudied X...</td>
</tr>
<tr>
<td>-To understand X, it is crucial to...</td>
<td>-Recent work in X has questioned whether...</td>
<td>-Unlike existing approaches to X, our approach emphasizes...</td>
<td>-We will suggest ways to address shortcomings in current approaches to X...</td>
</tr>
<tr>
<td>-X is especially useful in...</td>
<td>-Ongoing studies indicate that...</td>
<td>-While X’s work has pioneered the field of Y, it has also raised new questions that need to be explored, such as...</td>
<td></td>
</tr>
</tbody>
</table>
Questions?