CASE WESTERN RESERVE UNIVERSITY
SCHOOL OF GRADUATE STUDIES

We hereby approve the thesis/dissertation of

Patricia Vail Lichtenstein

______________________________

Master of Arts
candidate for the _______________degree *.

Fey Parrill

(signed) ____________________________
(chair of the committee)

Per Aage Brandt

Todd Oakley

3/26/2010

(date) ____________________________

*We also certify that written approval has been obtained for any proprietary material contained therein.
# Table of Contents

List of Tables ................................................................................................................ 4  
List of Figures ............................................................................................................... 5  
Abstract ......................................................................................................................... 6  
Introduction ................................................................................................................... 7  
Definitions ................................................................................................................. 10  
What Is Authorship? ............................................................................................... 12  
Shared Structure of Perception and Language Use ................................................. 17  
Perspective as a Vector ........................................................................................... 22  
Image Schematic Patterns and Magnitude .............................................................. 29  
Rationale and Hypothesis ........................................................................................... 32  
Procedures and Methods ............................................................................................. 39  
Identification of Linguistic Samples ....................................................................... 39  
Identification of Episodic Types ............................................................................. 42  
Image Schematic Strings and the Metrics of Similarity ......................................... 44  
Presentation and Analysis of Data .............................................................................. 47  
Conclusion .................................................................................................................. 52  
Bibliography ............................................................................................................... 55
List of Tables

Table 1: Suppositions Underpinning the Present Study ..................................... 10
Table 2: Linguistic Samples ............................................................................. 42
Table 3: Episodic Types .................................................................................. 44
Table 4: Event Structure Image Schemas ......................................................... 45
Table 5: Similarity Metric ............................................................................... 46
List of Figures

Figure 1: Helping Hands Experimental Set-Up ..............................................14

Figure 2: Coordinated Modulation of Inner Representations.........................19

Figure 3: 2<sup>nd</sup> and 3<sup>rd</sup> Person Pairs by Episodic Type .................. 49

Figure 4: Distribution of Similarity Scores, Texts 9 & 11 .........................51

Figure 5: Texts 9 & 11, Pairs by Episodic Type ...........................................52
A sense of personal agency contributes to our understandings of the real world built on the platform of perception. A sense of personal agency can be expected to contribute to our understandings of virtual worlds built on the platform of language. Recent developments in cognitive science have shed new light on how we process personal agency through perceptual-motor interactions with real world features. Understanding how we process personal agency in linguistic cognition presents an important challenge for cognitive linguistics. Here I explore the proposition that image-schematic patterning plays a role in this process. As a first step in testing this proposition, I conduct a comparative analysis of contrasting corpora for a frequency assessment of a particular image schematic pattern’s occurrence within each sample.
Introduction

Language can elicit complex experiences from people, virtual experiences that momentarily seem as real as perceptual experiences elicited through interaction with features of local environmental targets. Here I test the proposal that one component of this complexity is conveyed through image schematic patterns of similarity within sustained depictions of certain types of events. The component of interest I am referring to is related to linguistic agency and linguistic perspective, although it is neither agency nor perspective in the usual senses of those terms. The phenomenon I am interested in differs from those terms in that it centers not on sentential entities but on human entities active in integrating linguistic detail. I refer to my phenomenon of interest as authorship or authorship valence throughout the remainder of this thesis, partly to avoid confusion with the standard usage of the terms agency and perspective and partly to acknowledge the relationship I see between the phenomenon I have already mentioned and a dimension of perceptual experience.

What I mean by authorship or authorship valence will become clearer as I proceed to explain in greater detail the studies in linguistics and in other areas of cognitive science that have led me to the present investigation. As an introduction to the concept, authorship can be defined as the recognition of a particular animate entity as the determining factor in the occurrence of an event. It is necessary to note that the phenomenon of authorship entails the interlocking of a self and the features of a representation such that the self is a potential source and origin of the events within the representation, and is at the same time potentially affected by events and the repercussions of events. The difference is straightforward between authorship as described in the previous sentence and agency, which as a linguistic phenomenon has been widely investigated within the context of semantic roles or syntactic
categories involving actors performing acts and the various mechanisms employed by different languages for marking such roles.

The first two subsections following this introduction provide my rationale for proposing that this phenomenon of authorship is associated with linguistic experience. My rationale revolves around the theoretical similarities between the underpinnings of perceptual experience and linguistic experience, and evidence in support of such theories regarding these underpinnings from vision research and gesture research. The thrust of my argument is that both perceptual experience and linguistic experience are based on inner representations that are in essence hypothetical understandings of the world; that this shared basis suggests some degree of similarity of processes; and, that this suggestion commands an increasing body of experimental support.

The subsequent two subsections address the question of how authorship might be aroused in linguistic experience. The key points to be borne in mind throughout the discussion of this question include the differences between interactions with local environmental targets and interactions with linguistic targets and, within the latter interaction, the differences between the linguistic entities and the human entities integrating themselves with those entities. That image schemas provide a kind of interface for all of these integrations is suggested by several factors, including that linguistic behavior and perceptual-motor behavior have been shown to arouse image schematic cognitive activity; that authorship is a predominantly unconscious phenomenon and image schemas operate to a large extent at an unconscious level; and that image schemas can be dissociated from linguistic entities and directed toward the human entities producing the linguistic behavior.
The final sections of the thesis present the methods I used in establishing a dataset to test my hypothesis, the analyses I performed on the data from that dataset, and the conclusions I came to on the basis of these analyses.

Because I use many terms in this thesis that might be nonstandard or might be used in nonstandard ways, I have included a section of definitions indicating specifically how I use these terms throughout this thesis. To conclude this introduction, I present a statement of the problem I intend, in part, to address and a table of the suppositions upon which the following investigation is based.

**Statement of the Problem.** Human beings form inner representations that are hypothetical understandings of the world. A person’s hypothetical understanding of the world at any given time includes a dimension that can be defined as an understanding of how he himself is integrated with the other features populating this hypothetical world. Two distinct modes have been identified by researchers with regard to this dimension, which can be described as a more interlocked and engaged mode in the sense that the individual feels himself to have a direct effect upon and from the other features populating the hypothetical world, or a more detached and disengaged mode in the sense that the individual feels himself to have no direct effect upon and from other features. The question of how this dimension works in the course of perceptual-motor experience is being addressed, for example, in studies of authorship processing. How it works in the course of linguistic experience is being addressed, for example, in studies of perspective. The present thesis concerns the latter question.
Table 1: Suppositions Underpinning the Present Study

<table>
<thead>
<tr>
<th>Supposition #1:</th>
<th>The inner representations associated with perceptual-motor behavior and the inner representations associated with linguistic behavior share cognitive infrastructure because both involve the formation of hypothetical understandings of the world.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supposition #2:</td>
<td>Linguistic behavior consists of sharing specifications for the formation of coordinate inner representations.</td>
</tr>
<tr>
<td>Supposition #3:</td>
<td>One of the shared specifications produced during linguistic behavior is associated with the participant’s understanding of how she herself fits into the hypothetical world.</td>
</tr>
<tr>
<td>Supposition #4:</td>
<td>A related dimension to the specification that is the topic of supposition #3 is operational during perceptual-motor experience.</td>
</tr>
<tr>
<td>Supposition #5:</td>
<td>Findings about the processes through which this dimension becomes operational during perceptual-motor experience can be adapted in investigations into its operation during linguistic experience because of the correspondence between the two types of experience.</td>
</tr>
</tbody>
</table>

Definitions

The phrase **action consequence** refers to an event the cause of which is ascribed to the usually willful act of an agent.

The phrase **action relevant thought** refers to a mental representation or understanding of the world that is believed to be the source of an act or event in the environment.

The term **authorship** refers to a subjective feeling state of agency, i.e., to an understanding of an event as issuing more or less from oneself and having repercussions upon oneself.

**Authorship indicators** are inputs to authorship processing neural circuitry from associated pathways.

The phrase **authorship inference** is intended throughout this thesis to mean the arrival of an individual into a subjective feeling state of authorship, which can approximate a more enactive state or a more depictive state.
The phrase *authorship processing* refers to the neurophysiological integration of authorship indicators culminating in an authorship inference.

The phrase *authorship valence* is intended throughout this thesis to refer to an intensity of authorship that varies from depictive to enactive.

The term *depictive* (after MacWhinney, 2005) is used in this thesis to mean a minimal level of authorship on the authorship valence scale—i.e., understanding of an event as issuing less from oneself and having minimal repercussions upon oneself.

*Direct bodily feedback* refers to signals relayed by the peripheral nervous system to the central nervous system for processing and potential conscious consideration.

*Direct bodily feedforward* refers to signals relayed to the peripheral nervous system by the central nervous system.

The term *enactive* (after MacWhinney, 2005) is used in this thesis to mean a maximal level of authorship on the authorship valence scale—i.e., understanding of an event as issuing more from oneself and having maximal repercussions upon oneself.

*Gesture* refers to a part of language that is nonsegmental and noncombinatoric.

*Image schema* refers to neurologically-based structure that is topological, recurrent across different kinds of experience, and supports inference through gestalt-like internal structure.

*Indirect bodily feedback* refers to homeostatic adjustments to internal bodily conditions.

As applied to image schemas in this thesis, *isomorphism* means that the superimposition of two image schemas results in one of two following patterns—one-to-one structural correspondence or complete structural symmetry.
The phrase *linguistic experience* is used in this thesis to refer to participation in the deployment of inner representations through exposure to linguistic features that replace absent target environmental features.

The phrase *perceptual-motor experience* is used in this thesis to refer to participation in the deployment of inner representations through the presence of target environmental features.

*Protagonist*, as used in this thesis, refers to the central figure of a narration.

*SELF* is used in the context of this thesis to refer to an individual consciousness.

*Verbal* refers to a part of language that can be characterized as segmental, analytic, and combinatorial.

*Verbalizer* refers to an individual who is participating in the deployment of inner representations through exposure to verbal linguistic features. The term refers to both producers and receivers of language because both are modulating inner representations through contact with linguistic features.

*Visual action feedback*, in this study, refers to visually processed information that can contribute to an inference concerning the initiation position of an action.

**What Is Authorship?**

Authorship in the context of perceptual-motor experience and the formation of inner representations refers to a state of consciousness having to do with an understanding of an event in the world as issuing from the thoughts and concomitant actions of oneself as opposed to issuing from the thoughts and concomitant actions of another. Authorship indicators, the processing of which results in an authorship inference (Wegner & Sparrow, 2004), include direct bodily feedback (Georgieff & Jeannerod, 1998), indirect bodily and
sensory feedback (Daprati et al., 1997), direct bodily feedforward (Blakemore & Frith, 2003; Fourneret & Jeannerod, 1998), action relevant thoughts (Wegner, 2003), frames for action consequences (Dijksterhuis et al., 2008), and social cues (Preston & Wegner, 2005). Wegner and Sparrow (2004) argue that authorship processing is important to our species especially in the case that, although we as individuals command little control over events within our environment, we nevertheless operate under the impression that through our thoughts and actions we can be predominant causal agents in our worlds. The implication of such an argument is that subjective feeling states of agency, rather than actual agency, adaptively engage the organism to react to events of biological or personal significance.

That the attribution of authorship relies on dedicated neurophysiological circuitry is suggested by the fluency with which neurotypical humans attribute agency, especially to themselves, and the dysfluency or dysfunction that affects those with particular neurological disorders (e.g., people with schizophrenia, who experience episodes in which they are not able to recognize their own agency or to attribute agency effectively to others). Evidence of a dedicated authorship processing system comes from studies of action-effect mismatches, of perceptual shifts in relation to voluntary and involuntary movement, of post brain injury alien hand syndrome, and of dissociation of authorship in patients with schizophrenia.

For example, in studies based on the pantomime known as “helping hands,” a visual trick is used to suggest to participants in the experiment that the arms and hands of another person are the participant’s own arms and hands. Figure 1 depicts the basic helping-hands arrangement, in which a participant views herself in a mirror with the arms and hands of another person (who is otherwise hidden behind a curtain) substituted for her own arms and hands. The experiment participant and the provider of the “helping hands” both wear
headphones, the latter to hear instructions regarding particular arm and hand movements to perform. The participant is also privy to some number of these instructions through her own headphones. Wegner, Sparrow, and Winerman (2004) report that participants experience a vicarious feeling state of authorship and produce enhanced skin conductance responses as a result of the movement and stimulation of the other person’s arms and hands, especially in those trials in which a participant hears an accurate preview of the upcoming event.

**Figure 1: Helping Hands Experimental Set-Up (used with permission of D. Wegner)**

Haggard, Clark, and Kalogerass (2002) present experimental evidence that people’s awareness of a movement as being voluntary or involuntary produces perceptual consequences. In this study, participants were asked to note the onset times of several events, including the commission of an act that they themselves perform voluntarily, the commission of an act that they themselves perform involuntarily (triggered through transcranial stimulation), and their perception of an auditory stimulus produced subsequent to either one of the aforementioned acts. The results show an attraction in time between voluntary movements and subsequent auditory stimuli and a repulsion in time between involuntary movements and subsequent auditory stimuli. The study authors argue that these examples illustrate the phenomenon of perceptual binding, which performs a cognitive function promoting experiences of agency in relation to the perceptible effects of an event.
Geschwind et al., (1995) present evidence of the neuroanatomical substrate of alien hand syndrome, a disorder resulting from injury to the brain in which patients experience neglect or alienation in relation to one or both upper limbs. Patients with this syndrome lose the sense that the movements of an affected limb originate with themselves and that the limb is a part of their body. The effects can be quite disconcerting, in that the movements of an alien hand can be specific in a manner suggestive of purposeful behavior. For example, Geschwind et al., (1995) report an episode in which the patient’s left hand begins to unbutton the patient’s shirt apparently against the patient’s will.

Difficulties in the attribution of authorship are a distinguishing characteristic of schizophrenia, for example patients in the midst of a schizophrenic episode may believe that their thoughts can will the actions of others or, conversely, that the will of others can impose itself onto their own thoughts and actions. Daprati et al., (1997) discuss experimental results indicating systematic misjudgments of authorship on the part of people with schizophrenia. In this study, participants were asked to judge whether the movement of a hand projected onto a screen was that of their own hidden hand or that of the experimenter’s hidden hand. Participants who were experiencing a schizophrenic episode during the experimental procedure were significantly less able to distinguish whether the movements that were observable on the screen originated with themselves or with the experimenter.

There are two relevant points to be taken from the above-reviewed studies with regard to the present thesis. These are that authorship processing makes a fundamental contribution to an individual’s understanding of the world and that authorship inferences are influenced by mental acts as well as physical acts.
This latter point becomes important for the present thesis in the development of a method for identifying episodes within a narrative that might be salient with regard to authorship valence. It suggests that authorship is parsed along two general lines of causal inference—i.e., events that issue from the actions of agents and events that issue from the thoughts of agents via their own actions or the actions of others. In linguistics, agency is often discussed in terms of an isolated action or event as presented within the form of a sentence or sentence-like structure. A variety of techniques are employed throughout the languages of the world for the formal expression of the relation between an event and its author as opposed to that between an event and its receiver. These techniques have been categorized, for example, as voice, transitivity, ergativity, and empathy. Authorship studies indicate that agency in an individual’s interactions with environmental features is a phenomenon that arises through the sustained linking of multiple actions and events. The purpose of the present study is to identify linguistic factors that might contribute to a verbalizer’s sustained linking of actions and events within a mental representation, deployed through linguistic means, such that an authorship valence arises within the verbalizer himself. The contention of the present study is that image schemas, which are cognitive structures important in perception and language, serve such a role.

The former point, that authorship processing contributes significantly to perceptual-motor experience in that an individual’s hypothetical understanding of the world depends to some extent upon it, is important for the present thesis in that it identifies the point of intersection between perception and language and allows for particular suppositions to be made in pursuing the present project. These include the supposition that the inner representations associated with perceptual-motor behavior and the inner representations
associated with linguistic behavior share cognitive infrastructure because both involve the formation of inner representations based on hypothetical understandings of the world. The processes of percept formation in conjunction with sensory stimuli and those of inner representation formation in conjunction with linguistic stimuli rely on similar pathways, one of which conveys authorship equivalencies. The following section discusses the intersection of perception and language in greater depth.

**Shared Structure of Perception and Language Use**

A growing body of evidence from research addressing “the inverse problem” in perception indicates that human percepts are generated according to predictions about dynamic local conditions based on past experience (see for example, Mulliken, Musallam, & Anderson, 2008) rather than the physical characteristics presented to our sensory apparatuses by environmental features. The inverse problem centers on the fact that a particular percept can be generated by an infinite variety of target stimuli and the consequent conclusion that no percept can be directly related to a generative environmental feature. In order to support behavior that is adaptive on a developmental scale as well as an evolutionary scale, perception must rely on a store of experientially garnered information (see for example, Howe, Lotto, & Purves, 2006). Perception can thus be seen as an inner representation in that it is a hypothetical understanding of the world based on the integration of multiple factors through divergent pathways.

Linguistic behavior, in the same way as perceptual-motor behavior, can be seen as a process involving hypothetical understandings of a world. In both cases, the inner representations associated with the behavior, though not generated by present environmental features, are triggered by present environmental features.
In perceptual-motor behavior, interactions between the perceiving organism and the triggering environmental features enable a stream of continuously adjusted hypothetical understandings about the local environment. However, the actions and reactions of the perceiving individual are in response to the percept or inner representation of the local environment that he is currently supporting. An input into this inner representation is the authorship valence of the perceiver in relation to the local environmental features as he understands them.

For example, an individual sitting in a meeting will have a different understanding of every feature of that situation and will have a different orientation toward the situation as a whole depending on the degree to which she perceives herself to be able to affect and to be potentially affected by the situation as it develops.

The inner representations associated with linguistic behavior are similarly triggered by present environmental features in the form of a series of longitudinal or compression waveforms (emanating from the movements involved in speech and gesture). These replace absent environmental features (i.e., the word CAT replaces the animal cat) in specifying the characteristics to be used in hypothesizing an understood world. Linguistic behavior, though, differs from perceptual-motor behavior in a crucial respect. In linguistic behavior, the interaction is with another human being in the environment, both of whose linguistic actions are perpetrated in service of adjusting an inner representation. In face-to-face conversation, the ongoing exchange of linguistic acts can be seen as part of a joint operation to support the concurrent formation of convergent hypothetical understandings of the world through coordinated modulation (e.g., cases of gestural mimicry offer a vivid illustration of this phenomenon in action). Linguistic experiences involving parties separated in time still
involve the coordination of inner representations, but the formation of those representations will not be concurrent and the coordination of modulation will be achieved to some extent through the anticipation on the part of one party of the other’s hypothetical understandings of the world. Figure 2 depicts the process of coordinated modulation.

**Figure 2: Coordinated Modulation of Inner Representations**

According to this model, language consists of shared specifications for the formation of coordinate inner representations. If we can suppose that perception and language use share cognitive infrastructure—a not unreasonable supposition given the similarity of the two in structure and function (see for example, Barsalou, 1999)—then we can suppose that a specification of the authorship valence of the language user in relation to the inner representations generated through language use influences those representations themselves.

Evidence from gesture studies supports the supposition that language use is similar to perception and that it integrates a feature akin to authorship valence. The following paragraphs examine the evidence for each of these two points in turn.

McNeill (1992, 2005) demonstrates that gestural behavior is global and synthetic, properties that it shares with perception. In gestural behavior, as in perception, structural coherence filters from the whole through to the parts. For example, the meaning of a particular feature in a gesture is driven largely by the pattern of features within the gesture as a whole and how the particular feature pertains to the whole in a behaviorally significant
manner. Similarly, the brightness of a particular feature within a percept is driven by the pattern of light as a whole and how the brightness of the feature pertains to the whole in a behaviorally significant manner.

Gesture allows unperceivable conceptual features to become available to perception in a more immediate fashion than does verbal language. Gesture provides access to otherwise inaccessible conceptual structure active during linguistic experience due to the following characteristics: first, the contrasting modes of gesture and verbal language allow the two to actualize different pieces of conceptual structure; and second, the temporal binding of gesture and verbal language allows the pieces to coalesce.

How the conceptual becomes perceptible through gesture is brought out in Liddell’s (1998) discussion of grounded conceptual integrations. Gesture, like verbal language, involves a mapping of an inner representation onto real space physical articulators. In gesture, the mapping is direct in that some feature of the inner representation is mapped onto some physical articulator. In verbal language, the mapping is indirect in that some feature of the inner representation is mapped onto a conceptual articulator, which is then mapped onto a physical articulator.

Verbal language is less imagistic in that the combination of parts into a whole proceeds, at least to some extent, according to a system of rules. The system of rules of any particular language can inhibit the verbal expression of certain types of features from an inner representation. Gestural expression of such features that are regularly absent from verbal expression in particular languages establishes that they are present in the inner representation even though they are not expressed verbally. Slobin (1996) discusses, for example, the frequent occurrence of gestures indicating the manner of motion events by
Spanish speakers during narrations which lack verbal indications of manner. The feature is present in the inner representation, but is actualized only through gesture.

Another example, more pertinent to the present study, of gesture actualizing conceptual structure that is absent from verbal language involves what McNeill (2005) refers to as first-person and third-person gestural viewpoints. A first-person viewpoint is actualized in gesture through a one-to-one mapping of a feature of an inner representation onto a part of the body of the gesturer. A third-person viewpoint is actualized through a whole-to-part mapping. McNeill (1992) cites several examples in which a third-person viewpoint in verbal language is temporally bound to a first-person viewpoint in gesture. Modulation of the relation between the two, according to McNeill (1992), supports cohesiveness in a linguistic performance. Conceptual mappings and integrations enable such modulations. The relevant point in terms of the present thesis is the possibility of a disconnect in the projections between the inner representation and the individual supporting the representation.

In their investigation of spatially-realized actualizations of inner representations about spatial features, Emmorey, Tversky, & Taylor (2001) posit the existence of two basic modes of experiencing an environment in terms of space. These two modes parallel the gestural viewpoints described by McNeill (1992). Emmorey, Tversky, & Taylor (2001) show that English speakers, in describing the spatial features of a scene, adopt one of two perspectives, a route perspective or a survey perspective, and their choice between these two perspectives seems to be related to the scale and complexity of the scene. In American Sign Language, as in English, two general strategies are available for describing the spatial features of a scene, the viewer spatial format and the diagrammatic spatial format. These formats have to do with the way that the signing space is used. In a viewer spatial format, the full depth of the signing
space in front of the signer is used, whereas in the diagrammatic spatial form, a low horizontal plane or a vertical plane is used. Emmorey, Tversky, & Taylor (2001) suggest that the strategy adopted by a speaker or signer depends upon the relationship of the conceiver to the inner representation of the spatial scene, i.e., whether the person supporting a representation of a spatial scene projects a representation of herself into that scene, outside of it, or (less probably) on the edge of it.

Linguistic experience differs from perceptual-motor experience in that it operates on multiple multi-level layers (Clark, 1996), it involves projections of identities in space and time (for example, Fauconnier, 1997), and these projections result in the propagation of distinct consciousnesses (Chafe, 1994), or SELFs. Perhaps the overarching divergence between perceptual-motor experience and linguistic experience is that the latter is predicated upon a joint action (Clark, 1996), which involves a coordination of layers, projections, and SELFs. These projections are relevant to the present topic in that they are thought to signal the main points available to a verbalizer for access to the features of an inner representation. The following section focuses for this reason on such projections.

**Perspective as a Vector**

The specification of an input putatively related to authorship valence has been discussed in linguistics in terms of perspective or point of view (see for example, Kuno, 1987; MacWhinney, 2005; McNeill, 1992; Talmy, 2000). These investigations suggest that perspective is associated with a projection of a SELF onto a specific spatiotemporal configuration within one of the layered domains that comprise linguistic experience.

MacWhinney (2005) identifies two basic modes of processing a representation, which he terms depictive and enactive. He posits that the depictive mode of processing is less
embodied than the enactive mode of processing, which can be promoted in language through reiterated, detailed, and coherent references to a protagonist in a linguistic representation and that protagonist’s actions and changes of state within the events depicted in the representation.

MacWhinney’s (2005) discussion of perspective is predicated on the proposition that grammar emerges in language through ongoing shifts in perspective, which maintain cohesiveness across five dimensions of conceptual space: direct experience; spatial and temporal position; event; social ideas; and, mental acts. According to this model, perspective functions as a force for equilibrium in that the perspective active in any one dimension needs to be compatible with the perspective active in any of the other dimensions in order to facilitate sentence processing. This necessity is posited to motivate much of grammatical patterning.

For example, MacWhinney (2005) presents grammatical phenomena related to anaphoric and reflexive coreference as ensuing from the flow of perspective along these dimensions. The sentence—Phil hid the book behind himself—poses no problem in terms of processing because the flow of perspective along the event dimension is congruent with the flow of perspective along the dimensions of direct experience and of spatial and temporal position; whereas the sentence—Phil ignored the oil on himself—does pose a problem, because the flow of perspective along the event dimension is incongruent with the flow of perspective along the dimensions of direct experience and of spatial and temporal position.

The parameters affecting perspective are different within each dimension according to MacWhinney (2005). Within the dimension of direct experience, for example, perspective depends to a large extent upon the type of sensory-motor interactions with features of the
environment experienced by an individual, which in language is realized largely through words according to MacWhinney (2005). Within the dimension of spatial and temporal positions, perspective depends largely on deixis and the projection of one’s own body (or in some cases the human form) onto other entities.

Perspective for Talmy (2000) is systematic among schematic categories, which include: spatial and temporal position; distance between regarding entity and entity regarded; mode of regarding; and, direction of regarding. Within each of these categories, one schema among a variety of possible schemas is actualized as a part of a conceptualization; the actualized schemas from each of the categories contributes to the overall point of view of the regarding entity. The individual schemas include egocentric, allocentric, and geocentric deixis; scope, size, and granularity of the regarded entity; synoptic and sequential presentation of elements of the regarded entity; and, prospective and retrospective direction of viewing.

The regarded entity, according to Talmy (2000), is an inner representation formed through the interaction of concept structuring systems. Talmy (2000) implies that the regarding entity is also an inner representation that is formed, to some extent, through the operations of the perspectival system.

Kuno’s (1987) account of what he terms empathy perspective also proposes a regarding entity of sorts. The projection of empathy on the part of this entity, which in Kuno’s (1987) consideration is the speaker, motivates particular grammatical and syntactic phenomena in speech. Perspective is a function of the empathy the speaker has toward each of the participants (including all human, non-human animate, and inanimate participants) in a representation. Empathy in the context of linguistic activity is a zero-sum situation: the
greater the empathy of the speaker toward one participant in a sentence, the lesser her empathy toward the other participants (neutrality of empathy is also a possibility). Perspective adheres to empathy. Inappropriate or marginal sentences result from clashes in perspective within a sentence.

Kuno (1987) analyzes a number of linguistic mechanisms associated in English with the expression of empathy which contribute to the alignment of perspective. These include descriptor dependency, passive sentence patterning, subject-topic agreement, anaphoricity, reflexives, and verbal and adjectival specifications. Kuno (1987) suggests that empathy flows more readily from a speaker to certain referents rather than others; for example, speakers empathize more naturally with referents of participants that are the topic of a discourse rather than those that are not, with referents of participants that are the subject of a sentence rather than referents of participants that fulfill another role in a sentence, and with human rather than non-human referents of participants in a sentence. Speakers empathize most freely with sentence participants that refer to themselves.

Implicit in Kuno’s analysis is a conceptual architecture in which two kinds of inner representation are being supported by the language user, one of which consists of the representation of linguistic features and the other of which consists of the representation of the referents of those linguistic features. The verbalizer has a relation, for example, both to the subject of a sentence as grammatical subject and to the entity referred to by the word or phrase fulfilling that role.

Clark (1996) explicitly outlines a conceptual architecture in which speaking and listening incorporate three different roles corresponding to three different types of activities. The speaker can be the “vocalizer,” the “formulator,” and the “principal”—roles that are
associated respectively with the person who produces the physical linguistic signal, the person who encodes the content of the message into linguistic symbols, and the person whose intention is encoded within the message. This listener can be the attendant, the identifier, and the respondent—roles that are associated respectively with the person who attends to the physical linguistic signal, the person who decodes the linguistic symbols into content, and the person who responds to the intention of the principal.

Language use, according to Clark (1996), is a “species of joint action” in which these different roles are negotiated by the participating parties operating along multiple levels of activity that can project from a primary “layer” to secondary, tertiary, etc., layers of understanding. On the most subordinate level, the production of and attendance to signals is negotiated; on the next subordinate level, the message is encoded and decoded; on a basic level, intentions and responses are negotiated. The activity of each of these levels can be confined to the primary layer of what Clark (1996) refers to as the “actual world of conversation,” or some of the activity can be projected onto a domain other than that of the local environment, i.e., a counterfactual domain that is built upon the domain of the local environment of the primary layer and that often, according to Clark (1996), represents a hypothetical world.

In situations in which the parties to a joint action are co-present, the activities available for integration into the joint action include aspects of language such as gesture and prosody, as well as nonlinguistic activities, which are unavailable in situations of linguistic experience involving participants who are not co-present. Joint linguistic action of the latter sort (e.g., written language) is largely dependent upon verbal behavior and, as noted (see for example, Bavelas & Chovil, 2000), requires a greater degree of verbal explicitness than
encounters of the co-present sort. Indications of the kinds of projections to be made—whether of identity or space and time, and onto what features populating which layers or domains—must be specified through verbal techniques in written language since the wider array of nonverbal techniques available in spoken language are not an option.

Chafe (1994), in his investigation into language and its relation to the flow of consciousness, identifies a network of strategies that exist in narrative English for guiding projections of identities in space and time. Chafe (1994) discusses such projections in terms of displacements of consciousness, or SELF. Key to this discussion is the notion of the potential dissociation of the representing SELF and the SELF that is being represented by it. In written narrative language, this dissociation is abetted by the separation in space and time of the author of the narrative from the appreciator of it. In the case of such language, the author projects the representing SELF either to a narrator who is embedded within the narrative world or to an unacknowledged narrator who, as such, ceases to be a SELF but instead has access to the details of the narrative world through omnipresence or omniscience.

The role of the representing SELF, according to Chafe (1994), is limited in written narrative language in that it primarily serves as an anchor to the represented SELF, providing a basis for locating the extroverted represented SELF. The represented SELF functions as the deictic center and associated point of view. The extent of the dissociation between the representing SELF and the represented SELF motivates the use of tenses, personal pronouns, and temporal deixis. The degree of immediacy of the represented SELF motivates spatial deixis and what could be referred to as cognitive deixis, in the sense that the perceptions, actions, evaluations, and introspections depicted are centered on a SELF.
As the relationship between the representing SELF and the represented SELF becomes more distal, the trace of a representing SELF fades, possibly to the point that it is no longer discernible within the world of the narrative. The trace of a represented SELF can also fade as the center of spatiotemporal and cognitive deixis becomes more diffuse, possibly to the extent that a point of view within the narrative world is no longer discernible. Neither of these cases, according to Chafe (1994), is necessarily brought about by a diminishing concentration of detail regarding the narrative world nor by a lack of commitment on the part of the verbalizer.

The picture of perspective that emerges from the above studies is of a largely directional projection. The phenomenon of authorship valence possesses an aspect of magnitude, in that it can be thought of as more enactive or more depictive. If authorship valence were to be thought of as solely a function of the directional projection of perspective, then the implication would be that some entity such as the end point of a projection carries a positively or negatively charged association for the verbalizer. Without such an implication, it is difficult to see how authorship valence can vary among narratives with projections of identical direction (e.g., toward an embedded narrator).

Another possibility, and the one adopted in the present thesis, is that perspective is a vector with both direction and magnitude. The question then becomes one of identifying the linguistic carrier of the vector’s magnitude dimension. The hypothesized solution investigated here is that magnitude is expressed through image schematic patterns among the events of a narrative. The following section presents the reasoning behind this proposal.
Image Schematic Patterns and Magnitude

The view of image schemas detailed by Dodge & Lakoff (2005) was employed in developing the premise of the present thesis. According to this view, image schemas are fundamentally neural circuits that link virtual experience to actual experience. An image schema can be thought of as a structure that is topological, recurrent across different kinds of experience, and supportive of inference through its own Gestalt-like internal structure. Basic image schemas are universal, primitive, automatic, and unconscious.

Image schemas in language are non-referential in that they point to nothing specifically. The same image schematic primitive (i.e., END OF PATH/CONTAINER) underpins the following three sentences.

- I walked into the kitchen.
- You walked into the kitchen.
- He walked into the kitchen.

In verbal language, there are restrictions with regard to reference to oneself and to others (for example, see Benveniste, 1971). Consequently, if a speaker is recounting to an interlocutor the experience of a third person, the speaker must refer to the third person protagonist with the third person pronoun regardless of the speaker’s own perspective on the events of the narrative. A speaker cannot say, for example, “Then I ran out of the house in a huff,” in reference to someone other than herself without causing confusion. Metanarrative strategies exist for overcoming this kind of restriction. For example, in a co-present exchange, the speaker can transform the narration from, “Then he ran out of the house in a huff,” to “Then he’s like, ‘I’m running out of the house in a huff.’”
Such metanarrative strategies can become complicated. For example, if a speaker is recounting an experience of her own but would like to present it in such a way that her interlocutor will view it from his perspective, she can say, “Then I’m like, ‘You’re running out of the house in a huff.’”

Both examples illustrate one of the slight problems with such a strategy, i.e., the awkwardness of integrating two levels of narration into one. When the speaker shifts from reporting the event (he ran out of the house in a huff or I ran out of the house in a huff) to enacting the event, the metanarrative commentary in a huff detracts from the fluency of the narration because in typical experience people tend not to comment on their actions as they are executing them. This detraction can be eliminated, for example, by changing the enacted event to, “Then he’s like, ‘I’m outta here,’” or, “Then I’m like, ‘You’re outta here.’” With this change, though, the image being conveyed potentially loses the structure that the term ran, the term house, and the commentary in a huff were meant to convey.

An additional problem with such a strategy is that certain registers prohibit this kind of metanarrative shift. While neither of these problems (i.e., with fluent expression transcending multiple levels of signification or with restriction involving the conventions of register) render this strategy invalid, their existence does suggest the possibility that other avenues are available.

Conveying authorship valence through image schematic relations, because they are non-referential and because they typically operate below conscious awareness (Johnson, 2005), would facilitate fluent multi-level specifications. It would allow language users, for example, to include specific metanarrative commentary within an enactive authorship valence without the impediment of potential contradictions of typical experience.
Modulations of authorship valence using image schemas would also be acceptable in any register because the alterations would be occurring below conscious awareness.

Image schemas, because they bridge actual experience and virtual experience involving language, imagination, and reason (Dodge & Lakoff, 2005; Grady, 2005; Johnson, 1987, 2005; Lakoff, 1987), present a probable means of modulating a phenomenon such as authorship valence within linguistic behavior. Cross-linguistic studies (Talmy 2000, 2005) indicate that all languages incorporate image schematic primitives and typological systems for combining them. Authorship valence, then, can only be a function of something other than the inclusion of specific image schemas or specific combinations of image schemas. The contention of the present thesis, that authorship valence is associated with patterns of image schemas across events, follows partly from that caveat and partly from the demands of transforming a topological property into one that can convey magnitude. That a more enactive authorship valence should be conveyed through a linking of isomorphic image schematic patterning and a more depictive authorship valence through a linking of non-isomorphic image schematic patterning is reflective of the phenomenon of perceptual binding.

For example, two linked events could be reported as *he ran out of the house in a huff … she escaped from the scene in a limo*; or as *he slammed the door of the house before marching down the front steps toward the sidewalk and the street…she escaped from the scene in a limo*. Both reports refer to the same events, though the events as referenced in the first example share schematic structure to a greater extent than the events as referenced in the second example. The flexibility of image schemas derives from the nature of our experiences of events or situations, which are multifaceted enough to allow variations in construal.
Rationale and Hypothesis

The larger question of interest, as far as the present thesis is concerned, can now be posed within a more substantive framework. The foundation of this framework is an understanding of language that builds upon Clark’s (1996) account of language as a joint action. Integral to the joint action of language is its function to promote the formation of coordinated inner representations among multiple individual supporters of mental structure. Exchanges within a linguistic encounter can be seen as exploratory adjustments to the inner representation in the pursuit of coordination. Such exploration ideally continues until each participant is satisfied that coordination has been achieved. With this aspect of language in mind, it becomes clear that all parties to a linguistic experience are verbalizers, whether they are producing perceivable linguistic behavior or not. It also becomes clear that the production of perceivable linguistic behavior serves to adjust the inner representation of the producer of the behavior as well as that of the perceiver of the behavior.

Participants in a co-present linguistic encounter have an advantage over those in an encounter lacking co-presence in that they have access to direct feedback from their interlocutor, as well as the opportunity for direct feedforward to their interlocutor. In a non-co-present linguistic experience, the verbalizer must presumably imagine an interlocutor with whom it is possible to exchange feedback and feedforward in the process of forming a coordinated inner representation. For a writer, this process amounts to foretelling the difficulties a distal reader might have in using the writer’s language to coordinate his inner representation with that of the writer, and then adjusting the language accordingly to accommodate improved coordination. For a reader, it amounts to retrofitting the language of the distal writer in order to overcome difficulties in reconciling inner representations. In both
situations, the current verbalizer attempts to coordinate her own developing inner representation and the presumed inner representation of her partner.

The above conceptualization of language is not to claim that without perfect coordination of inner representations a linguistic experience fails. It is to be expected that a partial coordination is sufficient to satisfy the participants that they can support an inner representation of the targeted hypothetical understanding of the world. It is also to be expected that certain dimensions of an inner representation are more pivotal than others in determining whether coordination has been adequately approximated. The dimension that is the topic of the present investigation (i.e., authorship valence) is, perhaps, not pivotal to the participants in a linguistic experience for coming to an adequate approximation of coordinated inner representations. This dimension does however play a role in representation formation, and so it is not unreasonable to expect an indication of it to be present in language.

In attempting to coordinate inner representations, people must share the specifications of the particular representation they are provisionally supporting at the time of exchange. These specifications include indications of the schematic structure of features and events within the representation as well as the relations among these elements in terms, for example, of landmark and trajectory, foreground and background, and focus of attention and periphery of attention. The latter set of specifications includes indications of the verbalizer’s relation to the hypothetical world of the representation. The features associated with perspective—including projections of the various SELFS—belong to this latter sort of specification.

Among the projections of SELFS is that of the SELF or the empathy of the verbalizer, actualized through specifications for example of tense, voice, and pronominal reference.
Authorship valence is associated with this particular projection. It is possible that authorship valence is actualized through specification of the direction of the projection. For example, a projection of the SELF of the verbalizer to a narrator embedded within the hypothetical world of the narration could correspond to a more enactive authorship valence; and a projection of the SELF of the verbalizer to a narrator unbounded by the hypothetical world of the narration or by a fixed locus outside of that hypothetical world could correspond to a more depictive authorship valence. The evidence presented in the studies reviewed above supports the conclusion that a relationship between the direction of the projection and authorship valence does exist. If no such relationship existed, then a projection of the SELF of the verbalizer to a character embedded within the hypothetical world of the narration, for example, would in no way facilitate a more depictive authorship valence. Nor would it hinder a more depictive authorship valence.

That the direction of projection is not in itself a sufficient indication of authorship valence, though, is suggested by examples of an enactive authorship valence being associated with narratives involving unbounded narrators—e.g., *The Odyssey* or *War and Peace*. Both of these narratives (*The Odyssey* and *War and Peace*) include linguistic actualizations of fine-grained detail regarding the hypothetical world of the narrative. Examples such as these raise the possibility that this aspect of linguistic actualization along with reiteration of reference is, as MacWhinney (2005) claims, associated with enactive and depictive modes. Two arguments oppose such a conclusion. First, fine-grained detail is more useful in actualizing an inner representation for a correspondent who has little experience with the features of the representation; and, it is arguably less useful in actualizing an inner representation of an experience with which a correspondent is personally familiar. For
example, in describing a cat washing its face, finer-grained detail would facilitate the formation of an inner representation for a person who has very little experience with cats, but might interfere with the formation of an inner representation for a person with a pet cat (see for example, McNamara et al., 1996). Second, situational variables of fine-grained detail bring coherence to the configuration of features within a representation. Detail differentiates foreground from background and directs attention among the different features of a representation.

The above-mentioned functionality of fine-grained detail within a narrative relates to the projection of the SELF of the verbalizer onto a point of view, providing access to the features of the narrative. Fine-grained detail, pronominal reference, and spatiotemporal deixis participate in a concertina relationship in terms of rendering linguistically the direction of this projection—as the contribution of one contracts, the contributions of the others must expand. It is the claim of this thesis that point of view is one aspect of perspective, which as a dimension of linguistic experience is a vector with both direction and magnitude. Magnitude relates to the authorship valence a verbalizer manifests regarding the features of an inner representation, which is not necessarily a function of point of view. To see that it is not necessarily a function of point of view, one can consider the absence of a one-to-one correspondence between authorship valence and point of view. For example, the Hemingway story “The Killers” employs a third person narrative in concert with an enactive authorship valence.

A legitimate question to be asked with respect to authorship valence is what evidence is there to indicate that it exists. Three types of evidence can be offered as indication of its existence. The first of these comes from gestural behavior in which a speaker gestures in
character, i.e., as if she were the protagonist of the story being narrated, although her verbal language indicates a more distal point of view (for examples, see McNeill, 1992). It can be argued that such examples indicate that the speaker is supporting two viewpoints, i.e., accessing the features of the representation from two positions one of which is more proximal than the other. According to the present thesis, another possibility should be considered, i.e., that the gestural behavior in such cases actualizes an aspect of the inner representation that is less apparent in the verbal behavior because of the rules associated with a segmental, combinatorial, and conventional form of expression.

The second type of evidence comes from the phenomenology of invested immersion in the hypothetical world of an inner representation deployed in the presence of a linguistic text. This aspect of experience is entrenched enough in our culture to have become codified in idiomatic expressions involving losing oneself in a book, falling in love with a fictional character, and having a book change one’s life. Forms of expression other than literature are also conducive to virtual phenomena of this sort. An objection can be raised that the ability of human beings to become virtually engaged with the hypothetical worlds of inner representations is not necessarily associated with the projection of the SELF into a position regarding the representation, and further that such a projection is not necessarily associated with the environmental features present during deployment of the representation. This is a valid objection and one that is best addressed through empirical studies.

The third type of evidence comes from perceptual-motor experience. An aspect of an individual’s understanding of a hypothetical world that varies from depictive to enactive, if it exists, would be a fundamental part of cognition in that its specification would crucially affect an organism’s grasp of its environment as well as its ability to formulate and execute
effective action. Research into the phenomenon of authorship and the processing of authorship indicators supports the proposition that authorship is such an aspect of cognition. Phenomena such as perceptual binding indicate that authorship processing influences the inner representations people form regarding environmental features. Dysfluencies of authorship associated with neurophysiological pathologies, such as counterfeit feeling states of authorship, suggest that it also affects the sense of engagement people experience with respect to environmental features.

That aspects of linguistic experience can be inferred from perceptual-motor experience is based on the principle that both involve the deployment of inner representations comprising hypothetical understandings of the world, albeit in the case of perceptual-motor experience the actions formulated and executed with respect to a hypothetical understanding are more immediately consequential to biologically successful behavior. Perceptual-motor experience is privileged in the sense that neurotypical people have no difficulty under ordinary conditions in distinguishing between the hypothetical understanding of the world of perceptual-motor experience and that of linguistic experience. That perceptual-motor experience relies to some extent on a hypothetical understanding of the world stems from the inherently uncertain information that is transduced by sensory receptors. Our perceptual-motor interaction with environmental features does not immediately arise from contact with those features, but must include an inference of the probability that the transduced information is associated with a behaviorally relevant aspect of the environmental features (Knill & Richards, 1996).

The principle remains that the two sorts of experience—perceptual-motor and linguistic—are related and that linguistic actualizations of perceptual-motor strategies, such
as pattern completion, have been identified. Image schemas have been proposed as neurocognitive structures that support perception, reason, and language (Johnson, 1987; Lakoff, 1987). Image schemas, as global and synthetic patterns of organization, can be understood as the incorporation over evolutionary time of accumulated information derived from the experience of both the species and the individual, which accommodates the inclusion of probabilistic inference during representation formation.

Evidence of the cognitive reality of image schemas has been demonstrated, for example, in experiments testing whether the image schematic structure of verbal primes affects performance on visual discrimination and visual memory tasks (discussed in Spivey, Richardson, & Gonzales-Marquez, 2005). Further evidence comes from experiments testing the inverse relationship, for example whether the schematic structure of visual primes affects performance on verbal comprehension tasks (Kaschak et al., 2005).

The hypothesis tested in the present study is based on the proposition that authorship valence is actualized in linguistic behavior through the patterning of image schemas across the linguistic coupling of salient events. It is hypothesized that in narratives in which the direction of the projection of the SELF of the verbalizer is to a SELF embedded within the events of the narrative, the frequency of similar patterns of image schemas will be greater than that in narratives in which the direction of the projection is to a SELF external to the events of the narrative. For example, a similar pattern of image schemas would entail an event with a schematic structure such as a count trajector in contact with a count landmark invokes a spatial relation of SOURCE-PATH-GOAL followed by an event with the same schematic structure. For example, *I went from the study to the kitchen... The ice fell from the dispenser toward the cup.*
Hypothesis

The frequency of similar patterns of image schemas across the linguistic coupling of salient events will be greater in narratives in which the direction of the projection of the SELF of the verbalizer is to a SELF embedded within the events of the narrative (i.e., second person narratives) than in narratives in which the direction of the projection is to a SELF external to the events of the narrative (i.e., third person narratives).

Procedures and Methods

Language, in the sense that it is a technique for coordinated modulation of inner representations, actualizes the features of those representations so that they are available for extrospection. The question framing the present thesis concerns the linguistic actualization of authorship valence. The proposed hypothesis centers on a systematic patterning of image schemas within linguistic samples actualizing a more enactive authorship valence. The first step in testing this hypothesis involved identifying such linguistic samples. In that authorship is considered to be a more salient psychological factor in specific types of event sequences, the next step entailed assigning a set of target event sequence types as the focus of analysis within each linguistic sample. The final step required the definition of symmetry with respect to image schemas and a determination of its measurement.

Identification of Linguistic Samples

There are two basic approaches to identifying linguistic samples with an overall enactive authorship valence. The approach that has been rejected in the present study is to focus on the response of a verbalizer to a speech or to a narrative. Such an approach is difficult because it requires a method for measuring the intensity of authorship experienced
by the verbalizer. One possible method, which has been used in authorship processing studies (see for example, Dijksterhuis et al., 2008), relies on the subjective judgments of participants. Other possibilities include the use of a discrimination task or a gesture study.

The approach that has been adopted in the present study follows from the supposition that a writer produces language that will facilitate the coordination, on the part of a reader, of the reader’s inner representation with that of the writer when the writer produced the language. An assumption is made that a writer producing a second person narrative is more likely to have done so in association with an inner representation that also incorporates a more enactive authorship valence, as opposed to the production of a third person narrative, which is more likely to be associated with an inner representation that also incorporates a more depictive authorship valence. In order to accept this assumption, one must accept that language is cognitive as well as communicative, i.e., that the language produced by a writer contributes to the formation of the writer’s own inner representation and that the language is indicative of the writer’s inner representation as well as the process of forming the inner representation.

This proposition is based on the recognition that a reader is expected to coordinate inner representations across two domains or layers. On one layer, he is expected to coordinate representations with the producer of the narrative. It is on this layer that the reader can assume the inner representation of a fictive writer and attempt to coordinate his inner representation with that of the fictive writer (which reciprocates the assumption of an inner representation of a fictive reader on the part of the writer with which she attempts to coordinate her own inner representation).
On another layer, the reader is expected to coordinate representations with the narrator of the narrative. It is on this second layer that principles similar to Benveniste’s (1971) “correlation of personality” and “correlation of subjectivity” come into play. With respect to the first of these two principles, the I-you “oneness” is preserved in that the I of the narrator addresses the you of the reader, and the I-you pair is in a sense unique with each instantiation. The I-you pair contrasts with the third person, who remains a nonperson external to the I-you interiority. On this layer, as in a situation of co-presence of interlocutors, I designates the one who is making a statement, as well as the SELF who is being depicted when I appears in the statement.

A non-co-present narrative distorts the principle of the “correlation of subjectivity” in that the inversion of you into I is an impossibility due to the inability of the I of the reader to address the you of the narrator. In this case, the opposition of subjective I and non-subjective you subsides so that you in addition to I can be seen as designating the one who is making a statement, as well as the SELF who is being depicted when you appears in the statement.

Evidence supporting the above theoretical principles has been demonstrated by Brunye et al., (2009) in experiments testing whether in response to sentences with first-person, second-person, and third-person protagonists, readers adopt a subjective perspective. A subjective perspective is indicated by a preferential response to a picture depicting an action from the actor’s point of view. The results support the proposition that pronouns influence perspective, that first-person and second-person pronouns are more conducive than third-person pronouns to the adoption of a subjective perspective, and that given a more developed narrative the second-person pronoun is more conducive to the adoption of a subjective perspective than the first-person pronoun.
Based on the above considerations, pairs of texts by the same author, one of which is written in the second person narrative mode and the other of which is written in the third person narrative mode, were identified for use as linguistic samples. Table 2 lists the authors and texts.

<table>
<thead>
<tr>
<th>Author</th>
<th>2nd Person Narrative</th>
<th>3rd Person Narrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margaret Atwood</td>
<td>Bread</td>
<td>Simmering</td>
</tr>
<tr>
<td>Jeff Vandermeer</td>
<td>Three Days in a Border Town</td>
<td>Greensleeves</td>
</tr>
<tr>
<td>Frederick Barthelme</td>
<td>Shopgirls</td>
<td>Trip</td>
</tr>
<tr>
<td>Wells Tower</td>
<td>Leopard</td>
<td>Brown Coast</td>
</tr>
<tr>
<td>David Foster Wallace</td>
<td>Forever Overhead</td>
<td>Adult World (I)</td>
</tr>
<tr>
<td>Dennis Lehane</td>
<td>Until Gwen</td>
<td>ICU</td>
</tr>
</tbody>
</table>

Each of the above samples was analyzed in terms of episodic type and pattern of image schematic isomorphism, as detailed in the following sections.

**Identification of Episodic Types**

An authorship inference arises from the integrated processing of many factors. Through the processing of those factors, the actions and events of an episode are linked to an agent as the source and origin of these actions and events. The object of interest for the present study is, in essence, that link and how its presence or absence promotes an individual’s sense of engagement with the world as she understands it. In order to examine this link, episodes involving the actions of a protagonist linked to prior or subsequent actions or events were extracted for analysis from the linguistic samples identified in the above table.

In identifying the episodes to be extracted for the present study’s data set, an emphasis was placed on the physiological as opposed to the physical, which resulted in the
marginalization of some authorship processing factors. For example, although authorship could theoretically be determined in many cases through quasi-mechanical cause and effect relationships in much the same way that such relationships between inanimate objects are determined, these kinds of relationships are not included in the present study. The following is an example of the kind of sequence that is not included in this study’s data set: “You hit him in the head with the shovel…the third swing makes the old man’s head tilt funny on his neck.” Computations, for example, of purely geometric factors concerning the position of the protagonist during the origin of an event and its conclusion are not included in the present study’s data set either. Observations made possible through a shift of the protagonist’s sensory apparatuses are not included on the basis that this process is structurally similar to mechanical cause and effect and, as such, is not the focus of the present study.

Of primary interest for this study are episodes of linked actions and events in which an authorship inference, if it is to arise, must do so through factors other than an unambiguous physical configuration of features within an environment. In order to isolate such episodes within the linguistic samples, several episodic types were identified for extraction and subsequent inclusion within the data set. The following episodic types are based on the sequences of events that have been identified in authorship processing research as particularly salient in the formation of authorship inferences (see for example, Wegner & Sparrow, 2004). The classification of types in the table below preserves the parsing of authorship in terms of events originating from actions and events originating from actions triggered by thoughts.
Table 3: Episodic Types

<table>
<thead>
<tr>
<th>Source Act or Event</th>
<th>Descendant Act or Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1: Protagonist action</td>
<td>Linked event or act by protagonist or other</td>
</tr>
<tr>
<td>Type 2: Protagonist intention or other mental act</td>
<td>Linked event or act by protagonist or other</td>
</tr>
<tr>
<td>Type 3: Event or act by protagonist or other</td>
<td>Linked sensation or mental act by protagonist</td>
</tr>
<tr>
<td>Type 4: Instruction to/by protagonist</td>
<td>Linked event or act by protagonist or other</td>
</tr>
<tr>
<td>Type 5: Protagonist/other act</td>
<td>Imitative act of/by protagonist</td>
</tr>
</tbody>
</table>

For the purpose of identifying target episodes within the sample texts, the protagonist is defined as an animate being upon whom the attention of the narrative is currently being focused; and, an event is defined as an occurrence involving more than one entity in the environment, a criterion which leads to the exclusion of events that consist entirely of mental acts.

Image Schematic Strings and the Metrics of Similarity

Target episodes from each of the sample narratives, having been classified according to episodic type as outlined above, were then subdivided into pairs of linked actions or events. Pivot actions or events (i.e., those that serve as descendent in one pair and as source in the following pair) associate multiple links within an episode. Each action or event within a pair was then analyzed according to four schematic factors: the structure of the trajector (MASS or COUNT), the structure of the landmark (MASS or COUNT), the presence or absence of contact between the trajector and landmark, and the image schematic structure of the action or event.
Identification of the image schematic structure of an action or event was based on the partial list of important image schemas provided by Johnson (1987). For the most part, the analysis conducted as a part of the present project relied on the schemas from this list and combinations thereof as providing a satisfactory approximation of event structure. Schemas were added on an as-needed basis in cases such that no schema from the list seemed to exemplify the structure of the event as presented.

<table>
<thead>
<tr>
<th>Spatial Schemas:</th>
<th>Spatial Schemas:</th>
<th>Force Schemas:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTAINER</td>
<td>OBJECT</td>
<td>BLOCKAGE</td>
</tr>
<tr>
<td>PATH</td>
<td>CENTER-PERIPHERY</td>
<td>ENABLEMENT</td>
</tr>
<tr>
<td>CYCLE</td>
<td>SCALE</td>
<td>COUNTERFORCE</td>
</tr>
<tr>
<td>PART-WHOLE</td>
<td>SPLITTING</td>
<td>ATTRACTION</td>
</tr>
<tr>
<td>FULL-EMPTY</td>
<td>SUPERIMPOSITION</td>
<td>COMPULSION</td>
</tr>
<tr>
<td>ITERATION</td>
<td>PROCESS</td>
<td>RESTRAINT</td>
</tr>
<tr>
<td>SURFACE</td>
<td>COLLECTION</td>
<td>SUPPORT</td>
</tr>
<tr>
<td>BALANCE</td>
<td>COUNTERPOSITION</td>
<td></td>
</tr>
<tr>
<td>LINK</td>
<td>LIMIT</td>
<td></td>
</tr>
<tr>
<td>NEAR-FAR</td>
<td>TRANSFER</td>
<td></td>
</tr>
<tr>
<td>MERGING</td>
<td>SUPPORT</td>
<td></td>
</tr>
<tr>
<td>MATCHING</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the analysis proceeded, it became clear that in many cases more than one image schema contributed to the structure of an event and in some instances the compounding of image schemas was recursive in that the structure of one schema was completely integrated within that of another. In those cases, the compounding or recursion was included as a discrete factor in the analysis and as such contributed to the similarity metric.

The isomorphism of two linked events was operationalized for the purposes of the present study as a lack of dissimilarity. In essence, the task of comparing the linked pair consisted of superimposing the schematic structure of one event upon that of the other and
abstracting the differences. Those pairs with fewer abstracted differences were considered to be more isomorphic.

In practice, the abstracting of differences from superimposed schematic structures entailed the calculation of the edit distance separating one schematic structure from the other, much in the manner of a hamming or Levenshtein distance function. A Levenshtein distance function measures the difference between two sequences of characters in terms of the number of edits required to transform one sequence into another. A deletion of a character, an insertion of a character, and a substitution of a character each count as one edit. For the procedure as applied in the present study, the schematic structure for each action or event within a linked pair was treated as a string of factors consisting of the structure of the trajector, the structure of the landmark, the presence or absence of contact between the trajector and landmark, each instance of compounding or recursion of image schemas, the type of each image schema (spatial or force), and the specific image schema within both types. A similarity metric was then assigned to the pair based on the number of steps it would take in order to transform one string into another. The following example, taken from the results of the present study, demonstrates this technique. Before image schematic conversion, the linked pair of events read as follows: she takes your face in her hands/something ... go all shifty and loose and hot as cigarette coal.

<table>
<thead>
<tr>
<th>Table 5: Similarity Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>C  C  C  COMPULSION/SUPPORT</td>
</tr>
<tr>
<td>MS MS R LINK/PROCESS/SCALE</td>
</tr>
<tr>
<td>1  1  1  1  1  1  1  1  1  1</td>
</tr>
</tbody>
</table>
The similarity score for the above linked pair of events is 9, which is equal to the number of steps necessary to convert the top schematic structure into the schematic structure below it—one to change the structure of the trajector from count to mass (*she* → *something*); one to change the structure of the landmark from count to mass (*your face* → *something*); one to change the relationship between the two from contact to reflexive (relationship between she and your face is one of contact → relationship between something and something is reflexive); one to substitute the type of schema from force to spatial (COMPULSION is a force schema → LINK is a spatial schema); one to specify the spatial schema (LINK is a particular spatial schema); one to substitute a spatial schema (SUPPORT → PROCESS); one to compound the structure (a level of complexity is added); one to insert a schema (a spatial schema is added); one to specify the schema (SCALE is a particular spatial schema). According to this technique, a higher score means a lower isomorphism between the two events.

**Presentation and Analysis of Data**

Each of the sample narratives was carefully examined for target episodes. The target episodes were then classified according to type and separated into pairs of actions and events. Each action or event was analyzed into schematic structure. Once this analysis had been conducted for all of the linked pairs, the similarity scores for each pair were calculated.

A total of 517 linked pairs of the target episodic types were found across the twelve sample texts. The second person narratives yielded 269 pairs. The third person narratives yielded 248 pairs. Of the 269 pairs in the second person narratives, 118 were classified as Episodic Type 1, 45 as Episodic Type 2, 80 as Episodic Type 3, 19 as Episodic Type 4, and 7 as Episodic Type 5. Of the 249 pairs in the 3rd person narratives, 143 were classified as
Episodic Type 1, 31 as Episodic Type 2, 46 as Episodic Type 3, 15 as Episodic Type 4, and 13 as Episodic Type 5. The similarity scores ranged from completely isomorphic (0) to largely non-isomorphic (13). Linked events within the second person narratives showed more similarity \( (M = 3.7, SD = 2.2) \) than linked events within the third person narratives \( (M = 4.2, SD = 2.0) \). This difference was significant, \( t(515) = 2.88, p = .004, d = 0.24 \). This greater similarity of image schematic patterning indicates that a possible correspondence between image schematic patterning and authorship valence exists.

The procedure developed for the present study, which integrates features that are relevant to our experience of agency in real-world situations, served to indicate an alternative course of investigation into the form of agency referred to here as authorship valence. In particular, the categorization of event pairs according to episodic type suggests the supposition that an emphasis on the sorts of episodes conducive to the generation of authorship inferences over other sorts of episodes supports a more enactive authorship valence in the context of a linguistic experience. Although any type of episode can be presumed to involve an authorship inference to the extent that an agentive source is identified in relation to the events comprising the episode, authorship inferences are arguably more important in types that involve a mental act because such inferences are the primary reason for considering such acts as causative. Figure 3 illustrates the distribution of linked pairs across episodic type within each condition.
Of the target episodes identified in the present study, the most interesting for the above purpose seem to be Type 2, protagonist intention or other mental act linked to an event or act by protagonist or other, and Type 3, an event or act by protagonist or other linked to a sensation or mental act by the protagonist. In order to determine whether there is a significant difference in the proportionate frequency of occurrence of these two episodic types between the two narrative conditions, a chi-square test for independence was performed on the distribution of episodic type between the two narrative conditions. The results of this test indicate that the difference is significant, $\chi^2(1, n = 517) = 12.89, p < .05$. The difference in distribution of episodic types points to the possibility that authorship valence is related to a concentration on links between mental acts and physical acts or events. Such an association between authorship valence and linked mental-physical acts agrees with authorship processing studies, which indicate that authorship inferences rely on implicit components.
rather than rational components when mental acts such as intentions are involved. The above results indicate that a greater inclusion of mental acts linked to physical acts, regardless of the image schematic patterning within the episode, might realize a more enactive authorship valence.

Although the twelve sample texts that served as the source of the present study’s data all hail from the same genre of verbal expression (i.e., short fiction), the pieces seemed to differ in their purposes. A difference in the purpose or function of a narrative may prove to be an important factor in terms of authorship valence and one which alters the character of the second person in a second person narrative and the third person in a third person narrative. As Benveniste (1971) emphasizes, you and I possess the quality of interchangeability. Due to this interchangeability, when a verbalizer refers to you, she may be supporting a representation of her correspondent embedded among the features of the representation, or she may be supporting a representation of herself embedded among the features of the representation. In the former case, the verbalizer is asking her correspondent to experience the representation as if he were in it. In the latter case, the verbalizer is asking her correspondent to experience the representation as if he were observing the verbalizer in it. The former is of the sort that inherently involves a more enactive authorship valence, while the latter is of the sort that inherently involves a more depictive authorship valence.

Although not designed to test such a relationship, the circumstances of the present study allow for an impromptu investigation. Based on a subjective evaluation of the sample texts, the predominant function of text eleven, Until Gwen, is more commensurate with a case in which the verbalizer is asking his correspondent to experience the representation as if the correspondent were in it; and, the predominant function of text nine, Forever Overhead,
is more commensurate with a case in which the verbalizer is asking his correspondent to experience the representation as if the correspondent were observing the verbalizer in it. The former should exhibit characteristics which, according to the present study, are associated with a more enactive authorship valence—such as higher similarity scores and a greater proportion of episodic Types 2 and 3. The latter should exhibit characteristics which, according to the present study, are associated with a more depictive authorship valence—such as lower similarity scores and a lesser proportion of episodic types 2 and 3.

The distributions show no significant differences among the two texts, $\chi^2(2, n = 92) = 0.73, p < .05$. Figure 6 illustrates the proportion of episodic types in stories nine and eleven, respectively.
The results of a chi-square test indicate that the difference between proportion of in the two stories is significant, $\chi^2(1, n = 92) = 17.72, p < .05$. This supports the proposition that authorship valence is actualized in linguistic behavior through an increased inclusion of salient types of episodes. In this case, the story purported to realize a more enactive authorship valence shows a greater inclusion of episodes linking mental acts and physical acts. The correlation of authorship valence and episodic type suggests that episodic type might be associated with the implicit, experiential component of authorship valence.

**Conclusion**

The results of this study provide support for the hypothesis that image schematic patterns of similarity are more frequent in second person narratives than in third person narratives. The results also indicate that certain types of episodes are probably more frequent depending upon narrative mode. These results can be interpreted in different ways. For
example, it is possible that second person narratives exhibit a greater frequency of similar image schematic patterns because depiction of events from the point of view of an embedded narrator allows less complexity, which results in a more frequent occurrence of similarity.

It is also possible that second person narratives exhibit a greater frequency of similar image schematic patterns because they are associated with a more enactive authorship valence. This second possibility provided the impetus for the present study. The reasoning behind the present study is that:

- because authorship valence is an important dimension in people’s understandings of the world, including those understandings deployed through exposure to linguistic stimuli, a correlation between some feature of the linguistic stimuli and authorship valence should exist;
- image schemas are a potential for such a feature because they provide the means by which individuals incorporate, internalize, or embody the events depicted in the language;
- image schemas on their own can present nothing more than the structure of the event;
- patterns among sequences of image schemas, however, can reflect other dimensions of events;
- one possible dimension is authorship valence, i.e., how the event is experienced;
- studies of authorship processing suggest that the binding of events is important in generating an authorship inference;
• similarity in the patterns of image schemas in linguistic material potentially reflects a kind of binding of events in perceptual-motor experience;

• second person narratives are more likely to be associated with an enactive authorship valence because the inner representation of the writer using a second person narrative for extrospection about that representation is more likely to incorporate an enactive authorship valence.

It must be noted, though, that the only inferences regarding authorship valence that can be made from the results of this study are that a correlation with similarity patterns among image schemas is not ruled out and that another potential source to be investigated in terms of a correlation is episodic type. These inferences indicate challenges for future research. Do narratives with patterns of high image schematic similarity prime a route perspective when describing the spatial layout of an environment with many landmarks? Do narratives with patterns of high image schematic similarity elicit subjective reports of a high authorship valence? Do narratives with a high frequency of certain episodic types elicit subjective reports of a high authorship valence? In answering questions such as these, we will be able to progress in developing what is largely unchartered territory at this time.
Bibliography


Daprati, E., Franck, N., Georgieff, N., Proust, J., Pacherie, E., Dalery, J., & Jeannerod, M.


Ganis, G., Thompson, W.L., Mast, F., & Kosslyn, S.M. (2004). The brain’s mind’s images: The cognitive neuroscience of mental imagery. In M. S. Gazzaniga et al. (Eds.), *Cognitive Neurosciences III* (pp. 931-941). Cambridge, MA: Massachusetts Institute of Technology Press.


