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Quintessence of Dust: Cognitive Neuroscience and an Actor's Process

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Quintessence of Dust
Cognitive Neuroscience and an Actor's Process

A Culminating Thesis submitted to the faculty of Dominican University
in partial fulfillment of the requirements for the
Master of Arts in Humanities

by

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San Rafael, California
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This thesis, written under the direction of the candidate's thesis advisor and approved by the Chair of the Master's program, has been presented to and accepted by the Faculty of Humanities in partial fulfillment of the requirements for the degree of Master of Arts. The content and research methodologies presented in this work represent the work of the candidate alone.

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Abstract

This thesis examines theories provided by cognitive neuroscience and applies them to an actor's process. In particular, this research addresses the subjectivity and intentionality of our consciousness and special *as-if* states of consciousness, supported by the work of John Searle and Antonio Damasio. The phenomenal feeling of character-model control is discussed and supported by the work of Thomas Metzinger. The paper also considers our relative understanding of mirror neurons and specifically their function in relation to intersubjectivity and their use for an actor's creation and conveyance of character in rehearsal and performance. It examines Stanislavsky's notion of emotional memory and imagination. Finally, a personal case study is included which reflects my involvement in theater. The case study serves as a functional correlation between the concepts derived from cognitive neuroscience and recognized theatrical practices. It endeavors to discern areas where an understanding of the afore mentioned theories would have been advantageous to my overall performance, and to other actors as well.

What a piece of work is a man! / How noble in reason, how infinite in faculties, / in form and moving how express and admirable, / in action how like an angel, in apprehension how like / a god! The beauty of the world, the paragon of animals! / And yet, to me, what is this quintessence of dust? (Shakespeare, Hamlet, Act II, ii.)

“What is this quintessence of dust?” It is a question almost all of us ask ourselves at some point in our lives. Perhaps we are not as poetic in our query as William Shakespeare, nevertheless, our ontological curiosity is persistent. Theater provides a place for ontological exploration, and to express the stories that assert our existence. Actors portray the characters that tell these stories, and endeavor to do so believably. If an actor has relevant knowledge of her own ontology, she is better equipped to create a more veridical character, and therefore tell a more veridical story. The relevant knowledge of our ontology can be found in cognitive neuroscience. Science has provided extensive support for theatrical endeavors arguably since formal theater began. The study of our biology, physiology, mental states, emotive capacities, and behavior are all constitutive properties for understanding what it is to be human. Cognitive neuroscience is the current manifestation of the study of our ontology. The research being done in this new mind science is providing solid, verifiable data about our brains. This is specifically applicable for the comprehension of our consciousness. How does neuroscience apply to an actor’s process of developing a character and conveying that character in performance?

When an actor learns about theatrical concepts, she learns to rely on them. Some archetypal examples of theatrical concepts are: emotional memory—the inner emotional content that an actor draws upon relationally to express the story of the play through the developed character; given circumstances—the conditions present within the play: the place, time, words, images, and emotional content, basically, the world of the play the actor is given by the playwright in which

to convey the story; objectives—the specific intentions of the actors, the characters they portray, the intentional direction of individual scenes connected to the overarching intent of the entire play. Obviously, there are many other significant concepts—too many to engage and explain equitably here—actors must learn to create fully embodied characters; tools that are necessary to convey the story through the character she creates.

These concepts are all expressed and understood through an actor's subjective self-model expressed as a deliberate reflectivity of one's own truth. An actor must serve the script and story, so that the audience can access the aesthetic experience of the character's inner emotional state. Therefore, an actor must convey character through an individual subjective quality of truth and reality. In order for a character to be fully articulated, an actor must act in an '*as-if*' state of consciousness, which resonates to the audience as truth. The concept(s) of as-if will be discussed later. What is essential is that an actor learns about her 'self.' It is becoming abundantly clear through cognitive neuroscience that we are determined by our brain states. According to Sam Harris in his book, *The Moral Landscape*, "[T]he primacy of neuroscience and the other sciences of the mind on questions of human experience cannot be denied. Human experience shows every sign of being determined by, and realized in, states of the human brain" (8). Our brains, physical organs, are the determining factor of human experience. The more an actor knows about her own neurophysiology, the more control, and depth she is able to express in her art.

Theater is an expression of our stories. It allows us to richly convey meaning to each other, and to maintain the vibrant stories that define us ontologically. To further emphasize the quote from Harris, John Searle speaks of our mental states as derived from our neurophysiology, in a paper entitled "Free Will as a Problem in Neurobiology." Searle asserts; "All of our mental

states are caused by neurobiological processes in the brain, and they are themselves realized in the brain as its higher level or system features” (492). We are a product of neurobiological processes. We manifest consciousness through physical processes in our brains. Therefore, our neurophysiology becomes expressed in the conscious self. If an actor can understand her own neurophysiology, she can begin to master the complex diversity of her subjective experiences to better relate the stories through the characters she develops. She can use the knowledge of herself to obtain a deliberate reflectivity of her own truth. Daniel Dennett discusses the advantages of knowing one’s own mind in his paper “I Could Not Have Done Otherwise—So What?”:

Knowing that I will always be somewhat at the mercy of the considerations that merely happen to occur to me as times rushes on, knowing that I cannot entirely control this process of deliberation, I may take steps to bias the likelihood of certain sorts of considerations routinely “coming to mind” in certain critical situations. (563)

Of course, in his paper Dennett is asking us to consider the consequences of not having free will, or at least the type of freedom we believe we have. However, the notion he is conveying depicts the advantage of knowing one’s own mind. If an actor takes the necessary steps to understand her own mind, she is in a better position to “bias” the situations of future events. She enables herself to be better equipped to deal advantageously with the contingencies of future events, specifically on stage during a performance. As Polonius tells Ophelia in *Hamlet*, “This above all: to thine own self be true, / And it must follow, as the night the day, / Thou canst not then be false to any man” (Shakespeare, *Hamlet*, Act I, iii).

Of course, knowledge of our brains, of our ontology is only the first step. Once an actor knows more about her brain, more about why she does the things she does, has the kinds of mental experiences she does, reacts in certain ways to varying external stimuli, she will have to learn

how to apply this knowledge to her art. The application of the concepts expressed in this paper is of critical importance. However, we must first become aware of the current philosophical and scientific comprehensions of our neurophysiology. Once we begin to understand epistemically, we can begin the process of applying it to theater in a functional capacity.

Numerous theater practitioners in the twentieth century, most notably Constantin Stanislavsky, who died in 1938, have addressed issues of an actor's subjectivity and intentionality. Stanislavsky is a paragon of theatrical knowledge. Theater practitioners and academic scholars rely on his teachings consistently, perhaps more than any other person in canonical theater history. His work is an example of expressed knowledge of human ontology. Stanislavsky endeavored to converge scientific knowledge with theatrical expression. According to Rhonda Blair in her book, *The Actor, Image, and Action: Acting and Cognitive Neuroscience*, "Stanislavsky was more influenced by the work of scientists who were experimenting with conditioned response and reflexology, a psychophysiological approach that was a precursor of early behaviorism" (30). Stanislavsky wanted to understand the human mind to edify theatrical practice. However, the language used to explain our subjective consciousness in *An Actor Prepares*, by Stanislavsky, is at times outdated and vague. Research over the past twenty-five years in cognitive neuroscience and the correlative philosophical interpretations of this research have created new and more precise knowledge of how our brains work. This research lends itself nicely to the theater arts, specifically comporting itself toward an actor's refined understanding of self, the where, why and what of our being. It creates an understanding of how the physiological components of our brains work, interrelate and contribute to the phenomenon of consciousness.

These new ontological insights about our brains are important: when science informs theater practice it allows for a better understanding of what it is to be human. The knowledge gained from these insights can aid an actor in the conveyance of character, so that it is received with a realistic quality of truth by the audience. Cognitive scientific notions of the subjectivity of our consciousness are essential knowledge for an actor's preparedness and performance. These notions are pertinent to an actor's creation and conveyance of character. They aid the understanding of the subjectivity and intentionality of our consciousness, and a special as-if state of consciousness. These notions also assist in the comprehension of a state of consciousness that relates to the phenomenal feeling of character-model control, and the intersubjective connection between spectators and actors, specifically addressing mirror neurons, which are cells in our brains that activate in response to the actions of others. Cognitive neuroscience can also edify our understanding of emotional memory, our imagination, and other brain states that serve to create the rich experience of being biological agents engendered with consciousness. Finally, a personal case study reflecting my involvement in the theater, will serve as a functional correlation between the concepts derived from cognitive neuroscience and recognized theatrical practices. The case study will endeavor to discern areas where an understanding of the aforementioned theories would have been advantageous to my overall performance, and to other actors as well.

SUBJECTIVITY, INTENTIONALITY, AND “AS-IF”

The fact that our consciousness is subjective may be an obvious point to make. Clearly, the way we interact with the world, how we perceive it, and physically engage external causal stimuli is through our own subjective filter. According to Antonio Damasio in his book *The Feeling of What Happens*, “Consciousness is an entirely private, first-person phenomenon which occurs as part of the private, first-person process we call mind” (12). We view the world through our own private lens, made possible by the physiological processes of our brains. John Searle’s assertions about our subjective consciousness in his book *The Rediscovery of the Mind*, are compelling. He states empirically that our consciousness is a feature of our neurophysiology. Our consciousness is not a metaphysical phenomenon, but an intrinsic evolutionary result of our neurophysiology. Subjectivity follows as a result of our neurophysiological consciousness. Searle asserts; “The ontology of the mental is an irreducibly first-person ontology” (95). This means that in a normal natural state, our subjectivity is not a diminishable phenomenon. Rather, our subjectivity is an inherent feature of our neurophysiology. Searle states; “Every conscious state is always *someone’s* conscious state” (Searle, 95). Specifically, Searle defines one facet of our consciousness which is immediately applicable to an actor’s process: “intentionality.”

Intentionality in this sense does not mean authorial intention, having to do with the “original” intention of the author of a play. Intentionality is a philosophical concept which simply means that our consciousness is always focused on, or directed toward something. Thus Searle states; “all intentionality is aspectual” (131). What Searle means by aspectual is that our subjective consciousness is always focused with intent on some aspect in the world, or directed to the

thoughts generated by our mental processes. Damasio, in *The Feeling of What Happens*, describes our aspectual nature thusly;

[T]he human organism engenders the mental patterns we call, for the lack of a better term, the images of an object. By *object* I mean entities as diverse as a person, a place, a melody, a toothache, a state of bliss; by *image* I mean a mental pattern in any of the sensory modalities. e.g., a sound image, a tactile image, the image of a state of well-being. Such images convey aspects of the physical characteristics of the object and they may also convey the reaction of like or dislike one may have for an object. (9)

As previously mentioned, our minds are always focused on something, some aspect in the world that allows us to act intentionally in relation to the aspect. Damasio defines these aspects as objects and images, which can literally constitute anything external to us, or anything internal involving our mental patterns. Rhonda Blair contends; “Stanislavsky was adamant about the actor’s need for a rigorous image-based score” (78). The concept of intentionality is congruent with the theatrical concept of objectives as motive image/object based intentions.

Stanislavsky alludes to the idea of aspectual intentionality in *An Actor Prepares*, in the chapter entitled Concentration of Attention; “[A]n actor must have a point of attention, and this point of attention must not be in the auditorium” (82). Stanislavsky is claiming that the actor must be wholly engaged in his character, transported into the world of the play. Stanislavsky maintains that; “Intensive observation of an object naturally arouses a desire to do something with it. To do something with it in turn intensifies your observation of it. This mutual inter-reaction establishes a stronger contact with the object of your attention” (83). Stanislavsky is speaking of aspectual intentionality. When the actor has focused his intention on the conveyance of character while adhering to the story, he creates an individual subjective quality of truth and reality, relatable to the audience. Although we must attribute current cognitive scientific meaning to his words, the

fact that Stanislavsky was so attuned with our ontology is remarkable. It is doubtful Stanislavsky specifically meant to convey aspectual intentionality. Nevertheless, this interpretive definition of Stanislavsky's assertion is important for how we build upon canonical theatrical history and recognize between the information that is still valid for theatrical endeavors, and the information that must be reinterpreted, redefined, or simply removed. So, how does aspectual intentionality apply to theater?

These aspects of our intentional consciousness are instantly relatable to the idea of objectives for an actor. The intentionality of our subjective consciousness is invariably aspectual, and these aspects are correlative to an actor's objectives. What is of immediate interest is that we already ontologically function in terms of having intentional objectives. When an actor prepares, he must understand his character's given objectives, develop imagined objectives, and so on, and this is intrinsic to the way we normally function. Our consciousness is mostly intentional, although moods, or variant thoughts that flit through our brains, may not have *specific* intentions—the aspect of the intentionality may be consciously occluded—the impetus to act upon something stems from intentional motive functions in our neurophysiology. It is important to understand how an actor consciously acts upon an objective world intentionally. There is a contingent factor of conscious called *as-if*, which is an important, accessible, and relevant idea for an actor. However, *as-if* must be philosophically scrutinized in order for it to viably contribute to an actor's knowledge, and applied to his craft.

John Searle treats *as-if* as an errant form of intentionality. According to Searle, *as-if* intentionality applies to objects in the world that appear to intentionally do something, like a river flowing down a mountain. Although the river may appear to be intentionally flowing in a spe-

cific direction and fashion, there is no consciousness directing the river. The river “flows” because it is a process of the natural world, and adheres to natural law. Conversely, an actor—a conscious, subjective, intelligent being—acts upon the world intentionally. However, an actor mostly conveys elements of his character, within the circumstances of the world of the play, *as-if* it were real. When an actor is portraying a character, he cannot always act with explicit conscious intentionality, because the circumstances in which he is acting may not allow for sincere intentional actions. Fundamentally, an actor creates in an *as-if* state of consciousness, but when he acts upon something, his actions become intrinsic. Irrespective of his state of consciousness, an actor is bound by aspectual intentionality as an innate function of his consciousness. However, there is another form of *as-if*, discussed by Antonio Damasio and Rhonda Blair, that is specifically applicable to an actor’s process

Antonio Damasio examines what he calls “as-if body loops,” in his book, *The Feeling of What Happens*. He contends that there are times when the body acts *as-if* certain changes have occurred when they actually have not. Damasio asserts,

The change in the representation of the body landscape can be partly achieved by another mechanism, which I call the “as if body loop.” In this alternate mechanism, the representation of body related changes is created directly in sensory body maps, under the control of other neural sites, for instance, the prefrontal cortices. It is “as if” the body had really been changed but it has not. (80)

This type of change in the “body landscape” can occur when perceived actions or events cause a sort of automatic response to causal stimuli, usually in association with emotive observations of other peoples actions, or of events occurring outside one’s self to others. The responses to these perceived actions may be indicative of mirror neuronal processes, or evolved correlative neuronal processes in our brains. It is also a process of what Damasio calls “internal simulation.”

This internal simulation is important to the process of emoting and feeling. The simulative process allows for the activation of the imagination to consider possible contingencies within specific situations. Simulation also facilitates the process of character creation and embodiment of that character.

Rhonda Blair discusses Vittorio Gallese's idea of the "shared manifold of intersubjectivity," in her paper, "Cognitive Neuroscience and Acting: Imagination, Conceptual Blending, and Empathy." There are three levels to Gallese's theory that Blair interprets to assert theatrical connectivity:

[T]he phenomenological (involving empathy and sharing), the functional (involving simulation routines and as if processes, enabling models of others to be created within us—many of these at the preconscious level), and the subpersonal (which is "the result of the activity of a series of mirroring matching neural circuits. (99)

Gallese's "shared manifold of intersubjectivity," has great implications for understanding not only the imaginative simulative process that occurs in our brains, but also the intersubjective connection we share. All three of the levels are uniquely congruent with an actor's process, explained in current cognitive science terms. The phenomenological level, concerning our capacity to empathize and share (sharing is a component of our intersubjective/relational qualities) will be briefly discussed later in the section entitled Mirror Neurons and Intersubjectivity. Obviously, the subpersonal level will also be discussed with mirror neuronal activity. The functional level though, concerning simulation routines and *as-if* processes is germane to the current discussion. This level of Gallese's shared manifold is responsible for mapping the self/other. He states; "The functional level is characterized in terms of embodied simulation routines, '*as-if*' modes of interaction enabling models of self/other to be created" (525). This process facilitates the process of

mapping the self relationally to others. The functional level creates a coherent matching referential system in which to relate to an other by use of simulation. Gallese asserts; “At the functional level of description of the shared manifold, the relational logic of operation produces the self/other identity by enabling the system to detect coherence, regularity and predictability, independently from their situated source” (525). This relational aspect of the shared manifold simulates the other person to create an ‘*as-if*’ state of correlative connectivity. This level can aid in the simulation of character, relating to fellow actors, and creating an intersubjective connection with the audience.

As-if states of consciousness are integral to how an actor subjectively conveys a character. Interpretively, an actor—on a functional level—must act with real intentions, but filtered through an *as-if* state of consciousness. For example, an actor’s intention in a play may be to murder someone. He does not intend to literally murder someone (that is too authentic), instead he must create an *as-if* conscious state, with an intentional aspect, that appears to come from a state of true intentionality in order for the conveyance of the objective to be authentic within the play. An *as-if* state of consciousness must not be confused with Stanislavsky’s notion of “*if*.” Stanislavsky used the magic *if* to engage the imagination of the actor. However, once the imagination is properly engaged, and the character is developed through rehearsals, and emerges in performance, an actor becomes situated in an *as-if* state of consciousness. Therefore, Stanislavsky’s “*if*” refers to the implementation or initiation of our imagination, and an *as-if* state of consciousness is the active state of being within that imaginative *if* construct.

Ideally, an actor is mentally present when he performs. Of course, several Hollywood actors come to mind that challenge this mental presence. Nevertheless, an actor’s ‘phenomenal self-

model' (a term borrowed from Thomas Metzinger in his book, *The Ego Tunnel*) is never absent. When an actor creates a character, he is acting *as-if* he were someone else. He is emoting *as-if* the emotions were real. The reality of acting is that it conveys a story as authentically and truthfully as possible within the boundaries of given circumstances, imagination, emotional memory, objectives, etc., all through an *as-if* state of being. An actor must portray a moment with a quality of true intention *as-if* it were a consciously lived or substantively real moment. Stanislavsky states in *An Actor Prepares*, "What is important is how the actor, a human being, *would have acted* if the circumstances and conditions which surrounded Othello were real" (141). Within this quote is the *as-if* principle. Instead of saying *would have acted*, delete the words would have, and simply state: an actor, acted *as-if* the circumstances and conditions ... were real. This should be a relatable notion to an actor. However, there are times when the feeling of a particular moment during performance is so authentic, so truthful, that the phenomenal self-model of the actor appears to be lost within the words and emotions he is conveying; as if the character has assumed control. This is an explainable phenomenon. Again it must be stated that the phenomenal self-model of the actor, the subjective, first-person reality of the person acting, is always present. Thomas Metzinger provides an excellent answer for this phenomenal feeling of character-model control.

CHARACTER AND THE PHENOMENAL SELF

Thomas Metzinger begins the third chapter in his book, *The Ego Tunnel* with, “Owning your body, its sensations, and its various parts is fundamental to the feeling of being someone” (75). It is precisely this feeling of ownership that is manipulated when an actor has the feeling of character control. Metzinger states; “[Our] sense of ownership, which is a specific aspect of conscious experience—a form of automatic self attribution that integrates a certain kind of conscious content into what is experienced as one's self" (75). Perhaps an example of what happens to an actor on stage is necessary. Tom is an actor. He is on stage performing. During the performance, especially in heightened moments of emotion within the play, the feeling of Tom’s first person phenomenal self-model is subsumed by the feeling of the character-model he is portraying. The phenomenal experience of being on stage as Tom changes from a first person self-model to a first person character-model. When Tom’s conscious self-model becomes attenuated, the character he is portraying—in an *as-if* simulative state—becomes the focus of his subjective conscious. An imaginative, subjective slight-of-mind phenomenon occurs. What exactly is taking place in the brain, in our neurophysiological consciousness?

The intentionality of Tom’s consciousness is always directed at something. The character that Tom is portraying becomes his aspectual intentionality. His focus is directed toward the inner feelings and body-image of the created character-model. The attenuation of his first person self-model is partly a result of aspectual intentionality. It is also constitutive of our flexible body-image and our sense of ownership. Our consciousness, as understood by recent cognitive neuroscience, also creates an active body image that is adaptable to given circumstances. Metz-

inger uses two examples to relate this phenomenon: “Expert skiers can extend their consciously experienced body image to the tips of their skis. Race-car drivers can expand it to include the boundaries of the car; they do not have to judge visually whether they can squeeze through a narrow opening or avoid an obstacle—they simply feel it” (75). Therefore actors extend their body image to include the character they have created. The character becomes the aspect of directed consciousness.

When an actor directs his conscious self-image to include the character-model, he obtains a sense of coherence, similar to the coherence he feels absent character. The character becomes incorporated into his first person phenomenal self-image. According to Metzinger:

Subjectively, they are both part of one and the same bodily self; the quality of ownership is continuous and distributed evenly between them. You don’t need to do anything to achieve this effect. It seems to be the result of complex, dynamic self-organization in the brain. The emergence of the bodily self-model—the conscious image of the body as a whole—is based on a subpersonal, automatic process of binding different features together—achieving coherence. This coherent structure is what you experience as your own body. (77)

This automatic shift in the body schema of the actor to include the character-model he has created is a result of his imagined self, and the focus of his conscious intentionality. When Metzinger states that we don’t need to do anything to achieve this transformation, he is referring to our instinctive self-organizational response intrinsic to the physiology of our brains. Of course, an actor spends a great amount of time rehearsing, imagining his character, analyzing the script, memorizing the words, applying emotional depth, and so on. However, we have intrinsic neurophysiological features that automatically engage when we act. These features give the illusion of character-model control. What makes this type of control possible? First, control of one’s own self must be determined.

Thomas Metzinger again provides an excellent answer; “Owning something means to be able to control it, and selfhood is intimately related to the very moment in which the body discovers that it can control itself—as a whole” (102). Once we become conscious of our bodies inclusively—relating to our “self” as wholly integrated—we begin the process of control. This happens according to Metzinger when this inclusive awareness “includes an image of the body in time and space (location) plus the fact that the organism creating this image does not recognize it as an image (identification). So we must have a Now, plus a spatial frame of reference, and a transparent body-model” (102). Metzinger is connecting aspectual intentionality with our subjective consciousness, with the added referential quality of location. Who we are, the subjective, first-person, conscious being, emerges when we identify the “image” of ourselves within a specific time and space. Our sense of ownership is in itself constitutive of intentionality. If this is true, when an actor creates a character, and when that character becomes the focus of his intentional consciousness, the process of ownership takes place, which deepens the experience of attenuation of his first person self-model, allowing for a veridical feeling of character-model control.

Antonio Damasio provides further support for our sense of ownership in *The Feeling of What Happens*. Damasio asserts;

Ownership is hidden, as it were, within the sense of perspective, ready to be made clear when the following inference can be made: if these images have the perspective of this body I now feel, then these images are in my body—they are mine. As for the sense of action, it is contained in the fact that certain images are tightly associated with certain options for motor response. Therein our sense of agency—these images are mine and I can act on the object that caused them. (183)

What occurs when an actor prepares, when he begins the process of developing a character is the active pursuance of selecting an alternate body image. As the actor encompasses the body image, demeanor, characteristics (body inflections, vocal intonations, gestures, etc.) of the character

he is trying to convey, it is vital for the him to see (perspectival) his own sense of self within a time and space (location) transformed to incorporate the body “image” of the character. Once this transformation begins, the illusion of attenuation can begin to occur. The more images the actor can associate with the character he is creating, the more robust the feeling of character control. The images required for this transformation are derived from the text of the play—the given circumstances—from the director, from imagined circumstances, and from emotional memory. Emotional memory will be discussed later, however, Damasio provides some insight relevant to the current discussion that can elucidate the acquisition of images through memory that will establish relevance for further discussion of the topic. Damasio states; “[W]e store in memory not just aspects of an object’s physical structure—the potential to reconstruct its form, or color, or sound, or typical motion, or smell, or what have you—but also aspects of our organism’s motor involvement in the process of apprehending such relevant aspects” (183). When we draw from memories of past emotional experiences, we can utilize these experiences to create a mimetic synthesis between actor and character, that allows for the character to become a more fully articulated form of personhood. When an actor extends his subjective consciousness to convey the character he is portraying, he employs an intersubjective connection between himself and the audience. This is achieved in part by the activation of mirror neurons.

MIRROR NEURONS: INTERSUBJECTIVITY AND EMPATHY

Mirror neurons are a compelling discovery in neuroscience. The implications of this discovery are not only exciting for neurophysiological studies, but also interrelated to many other academic fields. The theater arts is one such field of study that can benefit greatly from the comprehension of these cells. Of course, with any new discovery there comes with it myriad of connections that aim to express the meaning of the discovery, with all the concomitant implications.

Mirror neurons are associated with simulation, imitation, language, intersubjectivity, imagination, empathy and more. A leading researcher and comprehensive writer on the subject of mirror neurons is Vittorio Gallese. His extensive knowledge is of significant importance to the comprehension and implications of these cells in humans. Gallese's paper entitled "The Manifold Nature of Interpersonal Relations: The Quest for a Common Mechanism," is a persuasive attempt to integrate some of the theories and implications of mirror neurons. Specifically, he discusses his idea called the "shared manifold," which will be discussed at the end of this section. However, a working definition of mirror neurons must first be established.

Vittorio Gallese offers functional insight salient to the understanding of these cells. He states;

The discovery of mirror neurons has changed our views on the neural mechanisms at the basis of action understanding. The observation of an action leads to the activation of the same neural network active during its actual execution: action observation causes in the observer the automatic simulated re-enactment of the same action. (522)

Quite simply, mirror neurons activate an imitative response in a person when an action is being performed by someone else. They enhance our ability to understand action and apply meaning to

those perceived actions. These cells also seem to engage even when the intention of an action is perceived. In fact it has been suggested by Lawrence Shapiro, in his paper, "Making sense of mirror neurons," that these cells act like an additional sensory system, "mirror neurons are best conceived as components of a sensory system that has a function to perceive action" (439).

Shapiro makes an interesting argument that advocates for mirror neuronal activity as an additional sense. Nevertheless, the simple function of these cells is to aid in the understanding of observed actions, which leads to a simulative response in the observer. The research being done on these cells has produced some exciting results. For example, it has been found that these cells are bimodal, responding to both visual and auditory stimuli.

In a paper entitled "Hearing Sounds, Understanding Actions: Action Representation in Mirror Neurons," co-authored by Evelyne Kohler, Christian Keysers, M. Alessandra Umiltà, Leonardo Fogassi, Vittorio Gallese, and Giacomo Rizzolatti, it was found that a particular neuron in monkeys, (neuron 4) when activated in response to various stimuli, exhibited selective audiovisual behavior. They state; "The sound alone of breaking a peanut produced a significant but smaller response, thus showing the importance of the visual modality for this neuron. However, the vision of breaking a peanut alone without the natural sound triggered no response" (847). It appears that the visual and auditory senses evolved to cooperate adaptively to various stimuli and actions. Of course, if the neural correlates of these cells found in monkeys are indeed present in humans, *we* do not physically act out everything through imitation just because these cells fire in our brains; it is not compulsory engagement induced by cellular stimuli. Nevertheless, according to this study, the audiovisual component of these neurons, the bimodal quality they exhibit, "reflects what normally occurs in nature, where, within a social environment, vision and sound of

hand actions are typically coupled” (848). The importance of these studies becomes relevant when they are applied to human consciousness and interactions with others. The actions performed by actors on stage, can be enhanced or augmented with sounds associated with the particular action. It appears that the meaning obtained through mirror neuronal activation from the observation of others is intensified through correlative audiovisual actions. If an actor is aware of this correlation, she may be able to exploit it to gain from, or heighten her performance.

Humans are social creatures. Our ability to empathize and cooperate is a key factor to our survival. The startling revelation of the aforementioned study by Gallese et al. relates these neurons to the development of human speech:

[T]he human motor speech area is the result of a long evolutionary process, already started in nonhuman primates. The discovery of audiovisual mirror neurons in this location may shed light on the evolution of spoken language for two main reasons: First, these neurons have the capacity to represent action contents; second, they have auditory access to these contents so characteristic of human language. (848)

Not only does this study suggest that mirror neurons could have been the precursor to human language, it suggests that mirror neurons are the key to the development of cooperative engagement. Communication is essential to the collaborative involvement of our species. To communicate in any capacity connotes the necessity to work together. Communication—gestural to spoken language—need only evolve in a species that relies in some way on the support of others. Although this information may appear to be tangential to an actor’s process, it is paramount to our intersubjective ontology. Theater is the human expression, engagement, and enactment of our stories. Amy Cook offers a cogent and relevant interrelation between mirror neurons and the intersubjective nature of acting.

In her paper entitled “Wrinkles, Wormholes, and *Hamlet*: The Wooster Group’s *Hamlet* as a Challenge to Periodicity,” Cook discusses the potential importance of mirror neurons to theatrical endeavors, specifically their intersubjective nature; “Acting in synchrony with others, based on the interplay of social conventions and spontaneous feelings, unites spectator with spectator as it also co-fires mirror neurons” (113). This synchrony between actor and spectator, and even between spectators themselves, as she suggests, is partly achieved by mirror neuronal activity, allowing for a deeper contextual interpretation of actions, and the meaning of those actions. Mirror neurons connect us to each other by creating a state of as if; the actions of others perceived as if we were the ones doing the perceived action. Cook suggests that this is achieved because; “The brain simulates action in order to understand action; it learns action by imitating action” (114). Even more compelling is that these perceived actions are attended by emotions and feelings. Cook states; “We imitate in order to feel, and we feel in order to know” (115). If we just perceived the actions of others as physical movement without the attendant emotional connections, we would not relate to them as real actions with the potential to be “our” actions: some contextual meaning would be lost. An important feature of mirror neurons is that they stimulate the imitative process. When we perceive someone doing something—opening a door for example—our mirror neurons help us decipher the intentions of the door being opened to include possible outcomes of the event. Cook defines the mirror neuronal activation succinctly:

Mirror neurons themselves do not discriminate between an act performed and an act as witnessed. Since watching is—at least for some neurons—the same as doing, drama inspires the imitation of an action, rather than being the imitation of an action. [...] It is the power and persuasiveness of audience imitation that is central to theater. So perhaps the rehearsal of actions and feelings that this generates allows us to respond to current or future experiences *as if* we had experienced them before, even though only a few of our neurons *actually* have experienced this before. (115)

The potential benefits of deeper audience engagement are apparent. The human animal has evolved tools to communicate in profoundly substantive ways, far greater in capacity than previously known. Imitation facilitates the representation of current and future states. For theater there is a threshold of intersubjective understanding that must be met.

Thomas Metzinger provides salient knowledge in *The Ego Tunnel* about mirror neurons in humans; “[I]t appears that the system in humans is much more generalized and does not depend on concrete effector-object interactions; consequently, it can represent a much greater variety of actions than it does in monkeys” (168). Essentially, our mirror neurons, as opposed to the mirror neurons in monkeys, behave more comprehensively, allowing for more refined interpretations of complicated intentions, and perhaps subtler actions as well. Even though the exact way our mirror neurons engage our simulative response is still being determined, the initial comprehension of these complex cells has extraordinary implications to how we relate to each other intersubjectively.

Mirror neurons may play a crucial role for empathy, and understanding intersubjectively what is happening in others. Rhonda Blair briefly addresses mirror neuronal activity in her book; *The Actor, Image, and Action: Acting and Cognitive Neuroscience*. Blair recognizes the significance of mirror neuronal research and the implications it may have for an actor’s process. In the afterword of her book, she notes; “[The] ongoing research into neural systems related to mirroring and simulation (including, but not limited to, research on mirror neurons) is raising major questions about the nature of imitation, simulation, empathy, intention, the roots of language, and the connections not just within, but among our brains” (106). Her recognition of this vital research is sanguine and apt. Theatrical studies should recognize the apparent vitality of thought

derived from the cognitive sciences. Presently, the articulation of theatrical concepts relies mainly upon old interpretations of human consciousness and human physiology.

Consider Diane Caracciolo's explanation of the interactions of actors with other actors, and the interactions between actors and audience in her paper, "Strengthening the Imagination Through Theater: The Contributions of Michael Chekhov." Caracciolo states, "Chekhov's method looks to awaken a feeling for group connectedness, what he called contact" (13). Although, from a functional point of view, this statement might convey the notion of intersubjectivity, nevertheless, it is vague. She continues;

This is an unsentimental opening of the whole heart to the inner life and impulse of others. Deep listening is necessary for genuine contact with others to emerge. We must become awake to the subtle perceptions of giving and receiving in our actions and have the courage and patience to enliven the space that weaves between human beings. (13)

Again, we can interpret what she means by, "opening of the whole heart," however, the obscurity of her words lend to an obscurity of definition. Upon reading these words, an actor must interpret them, which allows for the theatrical ideas to be misconstrued. Caracciolo's words are certainly poetic, however, one must "have the courage and patience" to interpret them. When she asks for us to "become awake to the subtle perceptions of giving and receiving," she is calling attention to the intersubjective connection established in part by our mirror neurons. She is trying to assert that an important aspect of acting is attending to the dynamic interrelatedness between the actors themselves, and between the actors and the audience.

If the audience is internally simulating what they are observing, they are connecting on a deeper more visceral level than previously thought. Metzinger states in *The Ego Tunnel*, "Converging empirical data show that when we observe other human beings expressing emotions, we

simulate them with the help of the same neural networks that are active when we feel or express these emotions ourselves” (168). In a play, when an actor portrays a character, extending his body image to incorporate his character model—when coherence is achieved—the mirror neurons engage in the people observing him to create an intersubjectivity that connects them to the actor, the imagined world of the play, and even to other observers. Metzinger establishes; “Certain layers of our self-model function as a bridge to the social domain, because they can directly map abstract inner descriptions of what is going on in ourselves onto those of what goes on in other people” (169). Of course, an audience will relate to a play on many levels: intellectually, aesthetically, experiential relatedness, and so on; nevertheless, mirror neurons also play an important role in generating empathy with those around us.

Empathy is a crucial aspect of our intersubjective ontology, which is partly achieved through mirror neuronal activity. Rhonda Blair provides a functional definition of how empathy works in a theatrical setting in her paper entitled “Cognitive Neuroscience and Acting: Imagination, Conceptual Blending, and Empathy.” She states, “[E]mpathy can help audience members better understand the plight of others in situations different from theirs, and possibly lead to actions directed toward positive change” (98). Undoubtedly, this is a prime reason for theatrical endeavors. Theater facilitates a deeper understanding of ourselves and others. For Stanislavsky, the connection with the audience is stimulated by the actor through the transmission of feelings. In the chapter entitled *Communion*, he states; “All you need is a slight stimulus and the feelings prepared for your role will gush out in continuous, spontaneous flow” (239). When an actor is in accordance with his inner emotions, he is better situated to convey those emotions and accord emotionally with the audience. An actor must create an empathic connection with the audience.

Stanislavsky continues by asserting that you (an actor) must “stimulate a feeling which you transmit to another person. As you do this you note the accompanying physical sensations. Similarly you learn to recognize the sensation of absorbing feelings from others” (239). This sensation of absorption is key to the engagement of the audience, and key to facilitating the inner empathetic processes of the actor. Actors will often comment on the audience backstage during a performance. If they do not feel that empathic connection, they will say that the audience is not giving anything back, or the energy is low, or the audience is dead. However, the actor is most often wrongly attributing this lack of energy to the audience, when in truth, it is most likely the performance of the actor who is not sufficiently conveying to and “absorbing feelings from” the audience. Mirror neurons play a key role in allowing for an unconscious level of empathic connection. In *The Actor, Image, and Action: Acting and Cognitive Neuroscience*, Rhonda Blair quotes Giacomo Rizzolatti: “Mirror neurons allow us to grasp the minds of others not through conceptual reasoning but through direct simulation. By feeling, not by thinking” (14). Empathy is precisely a feeling into something other. Our mirror neurons allow us to intuitively comprehend the minds of others.

Vittorio Gallese provides a definitive understanding of empathy in his paper, “The Manifold Nature of Interpersonal Relations: The Quest for a Common Mechanism.” His paper discusses our shared aspects—facets of our consciousness—that he suggests are inherent to our ontology. Gallese clearly links imitation, intention and empathy as part of our shared manifold of intersubjectivity. Of these aspects empathy creates an emotional, or feeling based connection with others. It facilitates the feeling into process of intersubjectivity. In a way, it subsumes the subjective nature of another person, creating an instinctive qualitative bridge of emotional understand-

ing. Gallese states; “When we observe other acting individuals, and face their full range of expressive power (the way they act, the emotions and feelings they display), a meaningful embodied interpersonal link is automatically established” (519). We automatically represent the emotions and feelings of others as similar action and feeling states in ourselves. Gallese calls the empathic state, the phenomenological level, “responsible for the sense of similarity” (524) between our self and others.

The shared manifold notion in relation to intentions, imitation, and empathy suggests “that all these different levels and modes of interaction share a common basic mechanism defining a shared interpersonal space: embodied simulation” (525). The embodied simulation is the “functional feature of the brain-body system, its role being that of modeling the interactions between a situated organism and its environment” (525). This embodied simulation, understood by the shared manifold is of vital importance to the expressive nature of theater. Actors represent a specific embodied character within the story of the play. They simulate the nature and qualities of another person, and use themselves as a conduit for that expression. Actors manifest the inner states, and physical actions of the character in order to connect to the spectator. Mirror neurons play a specific, functional role in achieving this interpersonal shared space. The subpersonal level of the shared manifold notion “is instantiated as the level of activity of a series of mirror-matching neural circuits. The activity of these neural circuits is, in turn, tightly coupled with multilevel changes in the body” (525). These neural circuits discussed by Gallese are the mirror neuronal cells that activate through the observation of others. They help to create a balanced state of interpersonal comprehension in concert with the first two levels: the phenomenological, and the functional level—the “embodied simulation routines, ‘as if’ modes of interaction ena-

bling models of self/other to be created” (525); discussed in the section on intentionality. As suggested by Rhonda Blair, Gallese’s shared manifold theory can greatly increase an actor’s level of awareness of herself, which in turn can aid her in the creation and conveyance of character. Obviously, the importance of mirror neurons to an actor’s process—especially for creating a character—is of great interest and a topic for further study. As the applicability of mirror neurons and the neural correlates in humans continue to be deliberated on, it is crucial to develop practical ways to apply this knowledge in the teaching of acting. Imagination, and the emotional content of our memories; (implemented by Constantin Stanislavsky to help facilitate the process of creating a character for the actor), supported and better understood through what Antonio Damasio calls the “autobiographical self,” can be useful toward the practical application of performance. Also, it is important to have a clear understanding of memory, emotions, feelings, and imagination, defined by conventional theatrical terminology, and edified by contemporary scientific notions.

EMOTIONAL MEMORY AND IMAGINATION

Actors learn theatrical techniques and develop the necessary tools to express the humanistic art of theater. One such technique is Emotional Memory. Emotional Memory (hence forth EM) is a way of drawing content from the personal experiences of an actor, in order to bolster the imaginative process of developing a character. More precisely, EM is a tool used to link the emotional content derived from the memories of the actor, with the emotional content of the created character within specific scenes of the play. Stanislavsky defined EM thusly; “Those feelings, drawn from our actual experience, and transferred to our part, are what give life to the play. You did not give those feelings. All external production is formal, cold, and pointless if it is not motivated from within” (178). What Stanislavsky is asserting is that an actor must rely on the truth of her inner emotions applied to the character she is portraying to appropriately convey the imagined emotions. Of course, it is rare that an actor’s experiences are identical to the experiences of the character she is portraying. In fact, one could argue that unless the actor is performing an autobiographical piece, the emotional content of a character within a play can never be identical to the emotional memory of the actor. One could further argue that even if an actor performed an autobiographical piece, the process of retrieval through the reconstruction of memories, would not allow for authentic emotional content. However, it is the similarities, the subtle nuances of the emotions of specific memories, that an actor must focus on to establish an imaginative link between actual experiences and the created experiences of the character. Actors often misinterpret the meaning of EM. Instead of relying on the imaginative process and using the emotional content of personal experiences to enrich the expressed emotions of the character, they

try to force the emotion of their memories to fit the emotional content of the character. An actor should never strive for duplication.

A refined definition of EM is the process of recalling the natural reactions, and felt emotions of a particular experience. However, are our memories reliable? In his book *The Feeling of What Happens*, Antonio Damasio posits three congruent kinds of self, of which consciousness is constituted: “Proto-Self, Core Self, and Autobiographical Self.” All though it would be interesting to discuss all three notions of self, we are only concerned with the autobiographical self in association to EM. Damasio defines the autobiographical self as the part of our consciousness that constructs the “individual’s biography” (174), or the individuals memories that form the story of identity. Damasio states:

The autobiographical self is based on autobiographical memory which is constituted by implicit memories of multiple instances of individual experience of the past and of the anticipated future. The invariant aspects of an individual’s biography form the basis for autobiographical memory. Autobiographical memory grows continuously with life experience but can be partly remodeled to reflect new experiences. Sets of memories which describe identity and person can be reactivated as a neural pattern and made explicit as images whenever needed. (174)

Damasio describes the autobiographical self as the “implicit memories of multiple instances,” which establishes a sense of self based on the experiential memories of the individual, or more aptly, coherence of identity through a story-like capacity. These memories can change when new information is added. This suggests that the autobiographical self is flexible, similar perhaps, to our sense of ownership. This flexibility is important to note, because it suggests that our memories cannot be relied on as fact, and therefore cannot be relied on substantively by the actor. If our memories exhibit a sense of impermanence, if they do not retain a substantive consistency,

and can change with the addition of new experiences, then how does an actor use EM as a tool to develop a character?

Constantin Stanislavsky, in *An Actor Prepares*, maintains; “Just as your visual memory can reconstruct an inner image of some forgotten thing, place or person, emotion memory can bring back feelings you have already experienced” (182). An actor must endeavor to simulate the emotional content of her memories to create an emotionally embodied character. Ideally, an actor wants to extract the quality of the emotion felt from a specific personal experience to enhance the expressed emotion of the character she has created. More concisely, the content of the experience—even the emotion felt in association with that experience—act only as the impetus to release the emotional qualia: It is not the exact emotion of the memory, but the raw quality of the felt emotion that must be used by the actor. The raw quality of the emotion then becomes incorporated into the emotional content of the character. Therefore, memories can be used to bolster the imaginative process of artistic creation. Amy Cook discusses memory metaphorically in her paper “Wrinkles, Wormholes, and *Hamlet*: The Wooster Group’s *Hamlet* as a Challenge to Periodicity;” “Memory is a process, an exercise, a muscular interaction between an always never past and an impossibly shifting present” (110). Memory is an imperative tool for the actor. The emotional content of those memories can be used to create a more emotionally substantive character. However, what are emotions? Are emotions and feelings the same?

In *The Feeling of What Happens*, Antonio Damasio maintains that emotions are the raw, initial reaction to various stimuli. Feelings are the thoughtful or conscious interpretation of the raw emotion. Damasio expresses a clear distinction between emotions and feelings. First he defines emotions as, “complicated collections of chemical and neural responses, forming a pattern; all

emotions have some kind of regulatory role to play, leading in one way or another to the creation of circumstances advantageous to the organism” (51). Emotions are a part of our representational capacities; they aid in our survival, and allow for a richer sense of life. Damasio states; “[T]he variety of emotional responses is responsible for profound changes in both the body landscape and the brain landscape. The collection of these changes constitute the substrate for the neural patterns which eventually become feelings of emotion” (52). Emotions then, are part of an unconscious mechanism that forms neural patterns which then become feelings. Feelings are the conscious translation of our emotions. Damasio explains; “Emotions automatically provide organisms with survival-oriented behaviors. In organisms equipped to sense emotions, that is, to have feelings, emotions also have an impact on the mind, as they occur, in the here and now” (56). Emotions when translated into feelings can affect the mind both positively and negatively. For example, when we experience an emotion—which then gets consciously translated into a feeling—the conscious or thoughtful comprehension of the experienced emotion can induce auspicious or antipathetic effects. We are then equipped to thoughtfully deal with these feelings (processed emotions) appropriately.

The importance of drawing a distinction between emotions and feelings is that it affects EM. Actors often confuse feelings with emotions. When an actor focuses on a memory from which to draw emotional content to be used by the character they have created, she must disentangle herself from the feelings of the actual memory to allow the raw emotions to emerge. However, as suggested previously regarding the autobiographical self, neuroscience is finding that memories are not concrete experiences embedded in our minds from which to draw forth replicas of initial experience. We actively and imaginatively construct memories when we consciously engage

them. According to Rhonda Blair her book *The Actor, Image, and Action: Acting and Cognitive Neuroscience*;

[W]e must reevaluate traditional approaches in acting to memory, particularly as they relate to feelings. For the actor, as for any person, memory is not a completely accurately retrievable truth, nor is it an object, in the sense of being a “fact.” Rather, it is a neurochemical reconstruction whose nature is affected by the context in which the retrieval occurs; it is a grasping on to the merest, ephemeral trace, affected by our immediate given circumstances at the moment of the remembering. (75)

With memory so defined, it is even more imperative to distinguish between feelings and emotions. If our memories are not a dependable “fact,” or something to be consistently retrieved, then memories are especially unreliable. Our brains reconstruct past events, and can change depending on the contingencies of the moment of retrieval. The emotional content associated with the memory has also been consciously translated into feelings.

However, if as Blair suggests, we must reevaluate our approach to acting concerning memory, it cannot be *in toto*. Our memories are still our memories. The sum of experiences in one’s life remains the experiential equivalent of identity. Blair is right that we must be wary of how we use our memories. Blair offers a way to interpret, understand and utilize our memories; “Defining memory as a tool of the imagination, rather than the reproduction of something from the actor’s literal history, liberates memory to be used more freely and theatrically” (75). Yes, “memory as a tool of the imagination” is precisely what is needed. However, Stanislavsky did not intend for the “literal history” of an actor’s life experiences to be reproduced for use on the stage. Stanislavsky intended for memories to be used as a “lever” to initiate the process, and to gain access to the raw emotional content of the memory. Blair continues; “Memory becomes a re-imagining of something that has cognitive, affective, and neurochemical utility, which is only

provisionally or secondarily autobiographical or historically accurate” (75). This is what Stanislavsky meant by EM. Perhaps my analysis asserts too much regarding Stanislavsky’s intention behind EM. Nevertheless, it seems apparent that the intent behind the use of memory, of accessing the raw emotional content, is *the* vital component of Stanislavsky’s EM method.

Stanislavsky was right to focus on emotion; he knew instinctively that the raw emotional content is what an actor should seek. Raw emotion is what allows for a performance to be fresh and vivid repeatedly throughout the duration of a production. If the actor intentionally focuses on the memory alone, trying to repeat the same feelings, the performance will fail to engage the audience. The stimulation of emotional content, an imaginative interpretation of specific memories is what causes an authentic performance. The strength of the emergent emotions during a performance relies on the imaginative preparatory work an actor does during rehearsals.

Imagination is critical to an actor’s process. Imagination allows us to direct our focus toward something unknown; it facilitates the process of creating something consciously unifying, like a character. According to Rhonda Blair; “Imagination is a, if not *the*, key term that provides a link between acting and cognitive neuroscience” (41). Imagination is an imperative component of creating, which allows an actor to be situated within an *as-if* state of consciousness. Blair is correct that memory is a useful device for the imagination. However, an actor must remember that memory is inconsistent and unreliable; use it to gain access to the underlying emotion needed to stimulate the character in performance.

Imagination is an attribute of the human mind that allows for, and facilitates possible contingent states of existence. Stanislavsky asserts in *An Actor Prepares*; “There is no such thing as actuality on the stage. Art is a product of the imagination, as the work of a dramatist should be.

The aim of the actor should be to use his technique to turn the play into a theatrical reality. In this process imagination plays by far the greatest part” (59). Of course we know that there is actuality on stage. First, on a practical level, theater is a human artistic expression, viewed in the act of creation: Theater is a living art. Second, on a philosophical level, we know that even if the creation of a character, or the actual performance stems from an imaginative *as-if* state of consciousness, it becomes intrinsic through the intentionality of our consciousness. Intentionality trumps imagination. Stanislavsky was aware of this, at least on a basic level; “First comes internal, and afterwards external action” (63). Imagination allows us to mentally “act out,” or visualize contingencies before they become intrinsic through intentional action. However, Stanislavsky is ultimately asserting that there is a difference between reality and theatricality, (theatrical reality) and imagination. He is also asserting that in a theatrical setting, there cannot be a complete synthesis of reality, nor should there be. Theater must remain an art; it is not supposed to be reality, but an imitation of reality. Stanislavsky states; “Every movement you make on the stage, every word you speak, is the result of the right life of your imagination” (77). If we come to rely on our imagination as a necessary tool for theatrical creation, in association with our given circumstances, emotional memory, aspectual intentionality (objective intentionality), and so on, we find all of these creating a synthesis of creative action, or as Stanislavsky says, “the right life of your imagination.”

Imagination is pivotal to knowing the self. When we engage in active imagining, we situate the “self” into possible scenarios which can lead to greater insight. Imagination is vital to signification as Rhonda Blair asserts in her paper “Cognitive Neuroscience and Acting: Imagination, Conceptual Blending, and Empathy;” “Imagination is the central act in making meaning” (95).

Cognitive scientific currently places great importance on the role of imagination. Imagination may influence the way we interpret experiences, how we participate in certain situations, and can be crucial to survival. Blair states; “[I]n order to be able to do something, one must be able to imagine it, and in order to understand something, one must be able to imagine it” (96). This is an important idea for an actor to understand. To create, she must be able to imagine her creation. Imagination constitutes both the mental creation and the physical actions that emerge from the creative mental process. Damasio offers a cogent assertion regarding imagination in *The Feeling of What Happens*, “Good actions need the company of good images. Images allow us to choose among repertoires of previously available patterns of action and optimize the delivery of the chosen action” (24). Similar to Blair’s assertion, that we must be able to imagine something in order to do something, Damasio links our mental, image based scenarios, to our ability to chose actions correctly. He further asserts; “Images also allow us to invent new actions to be applied to novel situations and to construct plans for future actions—the ability to transform and combine images of actions and scenarios is the wellspring of creativity” (24). The ability to transform our thoughts and invent the context for action is the fount of our artistic abilities. When imagination is applied to the idea of intentionality, and Stanislavsky’s notion of the “magic if,” and the idea of *as-if* states of consciousness, its importance becomes apparent. We are imaginative beings. Imagination not only affords and facilitates the creative process, it is the stimulus that allows for the simulation of self, and in theater, the simulation or mimesis of self through the created character.

We use imagination to create viable futures, to reinvent the past, to write works of fiction, indeed, in all facets of artistic endeavor. Imagination is also useful as a tool for survival. We can

imagine possible outcomes in critical situations. Damasio contends, “[S]urvival in a complex environment, that is, efficient management of life regulation, depends on taking the right action, and that, in turn, can be greatly improved by purposeful preview and manipulation of images in mind and optimal planning” (24). For example, if we were walking in the woods, and heard a low growl emanate from the underbrush behind us, followed by a rustle of branches and heavy footsteps, we could imagine all sorts of beasts, both real and delusional that could be responsible for those sounds and movements. Of course, we may not stay to ascertain what exactly made those sounds, however, if we survived the encounter, we could later use our imagination to create possible scenarios of which could aid in the survive of similar events in the future. Introducing imagination as a function of survival is relevant to establishing imagination as an inextricable capacity of human consciousness. Not only is imagination imperative to the process of creation, it also serves as a crucial contrivance for the making of meaning. Besides facilitating the creative process, imagination functions intrinsically, and perhaps primarily, as an aid for survival. An actor employs imagination to facilitate deeper meaning within herself, while creating and performing the humanistic art of theater. As afore mentioned in the introduction, the application of the theories discussed in this paper to improve theatrical practice is crucial. However, the theories had to be examined first, to establish their relevance to theatrical practice. The next section is an attempt to ascertain how my own personal involvement in theater as an actor, would have benefited from the knowledge and application of these theories.

A REFLECTIVE CASE STUDY AND SUGGESTIONS FOR PRACTICAL APPLICATION

The theoretical application of cognitive science and philosophy to theatrical practice can be a difficult endeavor. Some of the theories I have provided in this paper were designed more toward the elucidation of human ontology. My assertion has been that an actor may be able to use the knowledge of intentionality or mirror neuronal activity for example, to inform his practice—to help him understand some of the inherent features of being human. This knowledge can in turn make the creation process simpler, more controllable, and easier to apply to his craft. For example, these ideas may change the way he responds to certain stimuli, or how he directs his attention toward various aspects in the world, or how he reflects upon his feeling of self in relation to the audience. However, creating specific theatrical exercises to express and teach the concepts addressed in this paper may, or may not produce results conducive for the teaching of enduring acting methods. Because theater is a living art, new methods take time to develop. The following pages will strive to address ways in which these cognitive scientific and philosophical ideas could have illuminated my work as an actor. I will provide a little information about my theatrical background, and clarify specific principles (imagination, intentionality/objectives, and phenomenal self) which I deemed the most important to attend to as an actor. I will reflect upon my experience as an actor using these concepts, and then suggest possible exercises an actor can use to engage these concepts. I will separately address mirror neurons and emotional memory, with the latter reflecting my involvement in the play *Of Mice and Men*, by John Steinbeck.

I have been involved in theater for twenty-three years. I began acting in my last year of high school, and became entranced by the energetic feeling of performing on stage. I have been for-

tunate in my theatrical endeavors, having been in over thirty main stage productions (as well as myriad of smaller productions) as an actor, most of which were principle or leading roles. I have established myself as a competent actor in the communities I have lived, and in the colleges I have attended. I have always taken seriously the roles I have been given, employing my imagination (correlated to the limited theatrical knowledge I possessed), toward the creation of the characters I portrayed. However, I quickly realized early in my theatrical work, that I needed a system to create the necessary elements that afforded me the time and security to create. Therefore I began to develop a personal set of theatrical principles. I based my principles on various theatrical books I had read, college acting classes I had taken, the advice of different directors I had worked for, and the observation of my fellow actors, especially those actors I had deemed good at their craft. However, I primarily based my principles on an inner reflectivity of my own truth as an actor. These principles were developed to enable me to refine my process and comfortably explore my capacity as an actor, in an efficient, consistent, and creative way. I recognized that I needed certain things to happen in order for my creative process to begin, and to stimulate a maturation process over the duration of rehearsals. I also realized that I needed to establish a routine, or ‘warm-up’ before performances that situated me into the world of the play, and into the body of the character. It is salient at this point to discuss my personal method, and the routines I established during both the rehearsal and performance periods of production, to devise a coherent structure of thought concerning my creative process, and to further illustrate the areas where my work could have been improved by the preceding theories.

Of the various theatrical ideas I have discussed in this paper, the embodiment of character, imagination, and objectives (both internal and external) were at the core of my work. Of course I

took part in many theatrical exercises and games designed to aid the process of creation. However, it was rare that any of these exercises stirred my impetus to create. I found that I had to focus on my character, his movements, needs, desires, and emotions, his personal background, his specific reason for being in the story, his intentions in every scene, and so on. I found that the more I focused my attention on specific aspects of the character I was trying to create, the more he began to take shape. I found that it took a long time for my characters to emerge. Directors (the impatient ones) would at times tell me during rehearsals that I was not giving enough, or ask me where my character was and when will he appear. For me, the process of building a character is a layering process. I have to slowly, layer by layer, create the person I intend to embody in performance. Perhaps also, because I have gone through the production process so many times, I have adapted my creation process to coincide with the rehearsal process, so that my character does not emerge fully developed until right before performances begin. I cannot rush the imaginative process of character gestation.

This gestational process is imperative to my work. If the character emerges too soon, he will not be fully formed, and lack the necessary elements to achieve coherence. When I apply the theories addressed in this paper to my work, it is immediately discernible that aspectual intentionality, imagination, and the phenomenal self are notions that have shaped my creative process. As I did research for this paper, defined the areas I wanted to discuss, I was compelled to garner more knowledge from cognitive neuroscience and philosophy regarding these notions. The realization that I am an intentional being, that I already function this way ontologically, and the realization that objectives for an actor are identical to the aspectual nature of my intentionality was stimulating. These three elements (intentionality, phenomenal self, and imagination) will be

defined associated with my interpretation of character creation, and suggest possible exercises that could help with the process of practical application in rehearsal and performance. I will also try to articulate a practical application for mirror neurons and emotional memory. Although EM has been written about quite extensively, I will suggest an exercise that isolates the raw emotions of the memory.

Intentionality, the fact that it is an innate feature of our neurophysiology, makes fundamental sense to me. When I am on stage, not only does my intentionality focus on the aspects or objectives of the world of the play, and the immediate needs of the character I am portraying, it also focuses on the character itself. As stated earlier, the character becomes the aspect of directed consciousness. Aspectual intentionality (intentional objective) is what drives the story and characters; it is paramount to an authentic performance. However, having a deeper awareness of my intrinsic nature, knowing that consciousness is intentional, always directed toward specific aspects in the world and toward particular mental images in my brain, is edifying. The link between aspectual intentionality and theatrical objectives was a quintessential discovery for me. It affirmed the notion of objectives, and strengthened my reliance on them in theatrical practice.

Suggested Exercise for Aspectual Intentionality—Rehearsals:

Write down all the given objectives in the play pertaining to your character, and then correlate them to his super-objective (his overarching objective spanning the entire play, the primary reason he exists in the world of the play, his ultimate intention). Now, write down all the hidden objectives, the objectives you have to discern contextually in the play. After you have identified all the various given and hidden intentions of the character, and correlated these intentions with his super-objective, begin to define the imagined intentions you must create to stimulate the

process of directing your consciousness toward the embodiment of this character. Imagined objectives are imperative to creating a feeling of coherence between you and your character. You must link these imagined objectives to the given objectives to attain the feeling of character-model control. Once you connect these inner intentions—that not only connect you to the character, but connect you to the character and his given objectives—you can begin the process of the character becoming the aspect of your intentional consciousness.

The phenomenal self, also correlated to aspectual intentionality, was important for me to discern. As the feeling of ownership begins to develop to include the created character, as it becomes the aspect of my directed consciousness, it begins to cohere into a living expression of my creativity. Of course, *I* am never lost. My first-person self-model is never truly attenuated; it only appears to be subsumed by the created character. However, achieving the feeling of character-model control is something I strive to create. Although I am always present on stage, if I focus on the intentions of the character, and connect them with my imagined intentions, I find there are times when the words, emotions and physicality of the character become inseparable from my thoughts, emotions and physicality. It is at these times that I feel a sense of coherence, as if the thoughts, movements, and attendant emotions, arise from me independently, as if they are happening for the first time through me, as if I have become the character I have created.

Suggested Exercise for the Phenomenal Self—Rehearsals:

Ascertain the qualities that you possess that are similar to the given qualities of the character you are trying to convey. Of course, an actor can transform and augment his physical appearance, i.e., through physical movements, or theatrical prostheses; however, this exercise should focus on the similar physical and gestural qualities between the actor and the character. Imagine

the character standing in front of you, similar to looking in a mirror. What qualities does he possess that are similar or identical to yours? Move around, forwards and backwards, while maintaining the mental representation of the character in front of you. If it is hard to visualize the character model, try doing the exercise in front of a mirror. Determine which attributes best articulate the physical qualities you want to retain for the character. Try to divorce the movements and qualities that do not cohere to the character representation you have visualized. Repeat the exercise several times during the rehearsal process as the character slowly emerges and attains coherence. When you can imagine the physical and gestural qualities of the character, you can begin to embody them.

Imagination is obviously the most important aspect of the creative process. When I begin the process of creating a character, I must be able to imagine myself as that character. I have always relied on my imagination more than any other theatrical tool. As asserted earlier, imagination is the vital component that connects all other elements: it is an inherent aspect of my performance. It facilitates the simulation process necessary for character creation and portrayal. It allows me to see the character in my mind, manipulate and embody him. Imagination fosters my emotive capacity, and allows me to play with the dynamics of specific emotions, so that I can refine them to suit a particular moment. Imagination is crucial to human survival, an evolutionary adaptation that enables us to view and plan for possible contingencies. It is a necessary component of consciousness that facilitates our ability to exist and thrive. Imagination was crucial for my success in theatrical endeavors. I did not have formal theatrical training when I began acting. I had to rely on my imagination as the primary impetus of my creation process. It seemed obvious to me that in order for me to do something, I had to imagine it first. Damasio's statement on imagina-

tion is important to readdress; “[T]he ability to transform and combine images of actions and scenarios is the wellspring of creativity” (24). The set of theatrical principles I developed were based on my capacity to “transform and combine” my mental images to suit the actions of my created character. The routine I do before every performance (an imagination exercise) is essential for my preparedness.

Suggested Exercise for Imagination—A Performance Preparatory Routine:

Find a place on stage to lie down on your back. Ideally, choose a spot on the stage that is familiar to you as your character, for example, a place on stage that you spend the majority of the time during the performance. As you lie there, focus your eyes on a spot above you. I prefer focusing on a dimly lit stage light. Begin to attend to your body by contracting and relaxing the muscles, starting with your feet and slowly moving upwards to your head. This should take a few minutes. The significance of this part of the exercise is to physically prepare your body to take on (embody) the imagined physicality of the character you have created. If the character you have created has a different walk, or hand gestures, or a specific physical difference than you, focus a little more time on those affected body parts. When you reach your head, close your eyes. Now imagine that you are entering a tunnel. On the other side of the tunnel is your character. As you walk, or glide, or fly through this tunnel, you should be imagining meeting your character on the other side. When I do this exercise, because I focus on a stage light, the tunnel first appears amorphous, then transforms into a twisting tunnel of light. At first, I move through the tunnel, and then after a while, I feel as if I am being pulled through toward my character. When you finally emerge on the other side, imagine converging with your character; imagine physically and mentally becoming your character. Walk around on the other side of the tunnel.

The world should be the given world of the play. Imagine putting on your characters shoes or shirt. Imagine speaking to others as your character. Imagine specific scenes within the play, especially ones involving heightened emotions. The more specific and aspectual the imagination process is, the more complete the character transformation.

Mirror Neurons: represent a refined and more accurate assessment of what I called audience/actor energy. I knew that there was a connection between me and the audience, and with other actors on the stage. I knew that if this ‘energy’ was not properly engaged or fostered, the play would not attain the needed emotional weight to achieve a quality of realistic truth. I dealt with this intersubjective reality by adhering to my primary principles. I found that the more I concentrated on my objectives and my imagined character, the more I felt the energetic connection between myself and the audience. The research being done involving mirror neurons seems fruitful for the theater arts. Mirror neurons have the potential for clarifying elements of human consciousness, and for identifying ways we intersubjectively relate to one another. As further studies begin to identify the neural correlates of mirror neurons in humans, their application will become essential to many academic fields.

Suggested Exercise for Mirror Neurons—Rehearsals and Performance:

The bimodal nature of mirror neurons can be advantageously implemented in both rehearsals and performance. If you have a specific task to perform on stage, ascertain whether there is an accompanying sound associated with the task. For example, if an actor is sitting at a table and he is asked to drum his fingers on the table, it may be more effective having a sound accompany the action. Of course, you do not want to draw attention from other, perhaps more important aspects of the play, however, when we apply sounds to specific actions, they attain a deeper quality of

meaning. Discuss with your director the relevance of attendant sounds to actions, and ascertain whether the audiovisual action is appropriate to the scene.

Emotional Memory: is an aspect of theatrical methods I did not use very often. Directors have occasionally asked me to focus on a personal memory, or draw from the emotional content of experiences to bolster a particular scene. I always felt more comfortable drawing from my imagination, rather than using affected memories. However, after clarifying the ultimate function of EM, that it enables the actor to access the raw quality of previously felt emotions to incorporate those emotions with the imagined emotions of the character, I feel that it can be extremely useful. There have been times when personal experiences adhered naturally, or unconsciously, to the emotional content of my created character. For me, those emotions were automatically accessed because of the similar quality to the expressed emotions of the character. Nevertheless, EM cannot be relied upon for the character's expressed emotional content. If the action being performed on stage is not natural to you, and you cannot access a memory to draw the necessary emotions from, you will be creatively stuck. For instance, when I played George in the play *Of Mice and Men*, by John Steinbeck, I could not draw on EM to help me with the emotional content of the final scene, where George kills his friend Lenny. George has Lenny sit down in front of him, facing away, and while Lennie recites the dream of one day owning a farm, George shoots him in the back of the head:

Lennie. And I get to tend the rabbits?

George. And you get to tend the rabbits!

Lennie. (*Giggling with happiness*) And live on the fat o' the land!

George. Yes. (*Lennie turns his head.*) Look over there, Lennie. Like you can really see it.

Lennie. I'm lookin' George. I'm lookin'.

George. That's right. It's gonna be nice there. Ain't gonna be no trouble, no fights. Nobody ever gonna hurt nobody, or steal from 'em. It's gonna be—nice.

Lennie. I can see it, George. I can see it! Right over there! I can see it! (George *fires*.)

Lennie *crumples, falls behind the brush. Voices of men in the distance.*)

Curtain

There were no memories of which I could extract the raw emotion needed to convey this scene. I could not access latent memories of murder. I had to imagine what it would be like to kill a friend, a friend with the mind of a child. The imagined emotional content was still as real as emotion drawn from memory, perhaps more so. The emotion I felt from this scene burdened me. It clung to me for months after the show closed. It was because of the power of imagination; it can simulate the needed emotional weight, even if the emotion is one that has never been experienced before.

Suggested Exercise for EM—Rehearsals

Emotional memory can be an effective tool to draw the raw emotional content from previous experiences. In order for EM to be effective, one must have similar emotional experiences with the character in specific scenes. Of course, one could draw from other experiences that have the desired emotional content. However, the further you stray from the similarities between the memory and the scene, the more unnecessary it may be to use the emotional content of the memory. Find a quiet place to sit. Begin focusing on the memory that you intend to use to extract the raw emotional content. It is not important to remember every detail of the memory. What is important is how the memory emotionally affected you. Once you have identified the emotion,

(anger, happiness, sadness) concentrate only on that specific emotion. Imagine yourself experiencing the emotion. Once you begin the imagination process, you begin the process of drawing the raw emotion out of the memory to later be used in the creation of your character. Do not over analyze the emotion or the memory. Once you have isolated the emotion, the memory is useless.

In conclusion, there are many theatrical methods an actor can use. It is essential that an actor choose the method that suits her best. However, many of the current theatrical methods are outdated, especially concerning the way consciousness is understood. Some of the language used to teach acting can be misinterpreted, and belie the efforts of learning ideas an actor needs to develop her craft. Rhonda Blair states; “[A]ctors and acting teachers have to find a different and better way of dealing with the cultural contingency of language structures; a presumption of truthfulness of universality about a particular linguistic, cultural, or personal framework can unnecessarily limit an actor’s creativity” (56). Cognitive science can bridge the ‘linguistic, cultural, or personal gaps’. Stanislavsky defined and created the language needed for cohesiveness in European and American theater. His understanding of the intrinsic components of performance and character development is especially adept. Stanislavsky believed the study of science was essential for theater, because understanding our ontology is crucial for an actors preparedness. However, the science he bases his understanding of human ontology is not wholly substantial. His language is fraught with binary terms; terms that are not essential to an actor’s process. For example, when Stanislavsky speaks about subjectivity, he states; “[W]e filter [the material] through ourselves,” and continues with; “That material becomes a part of us, spiritually, and even physically” (56). The “material” (given circumstances, objectives, script, etc.), becomes

part of our active imagination and creates an as-if state of consciousness. There is no spiritual process taking place. We *are* conscious beings that act intentionally through subjective filters. Our observations are subjectively filtered, and intersubjectively relatable and grounded. When an actor is on stage performing for an audience, she does so through her subjective interpretation of the story. She connects with the audience, which creates intersubjectivity enabled partly by our mirror neurons. Therefore the stories we enact in plays are subjectively given and received. The aim of an actor within a play is to portray a character that is identifiable intersubjectively between the actor and the audience. Plays convey our stories. These stories are vehicles for relating to each other experientially and emotively. Stories serve a powerful motive function of human behavior: they give meaning to our existence. Cognitive neuroscience may provide the answers we need to develop a more refined knowledge of what it means to be human, and an actor can benefit from this knowledge in the conveyance of character in the stories that define us. Over time we forget we were telling a story, and become deeply and ontologically situated in the meaning initially communicated by the story—it becomes our lived experience. Theater allows us the possibility to actively, and consciously engage in the stories that define us now.

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