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Memory, Mind, and Mayhem: Neurological Tampering and Manipulation in *Dollhouse*

[1] Memory is defined as the ability to recall events and experiences, knowledge and information, and skills (Memory). This definition indicates that three types of data are stored in our memory banks, and psychologists label these three types as episodic, semantic, and procedural memory, respectively. Each type of memory is different from the other two, but all three can and do hold the details of our memories. And, it is these memories that serve as the basis of our identity, yielding a conception of self that arises around the age of 18 months and lasts a lifetime. Memory manipulation, via deletion, implantation, and re-creation, lies at the core of Joss Whedon's *Dollhouse*, and the purpose of this paper is to examine how Whedon and his writers envision that manipulation. I will first present a short overview of the psychological theory of the three aforementioned types of memory and then discuss how Whedon illustrates each in various episodes of *Dollhouse*.[1]

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[2] Manipulating memory in order to alter reality is a fairly common theme in science fiction. Examples of such manipulation can be found in numerous feature films such as *Dark City* (1998), *The Island* (2005), and the *Matrix* (1999) as well as novels and short stories, such as Roger Zelazny's *The Nine Princes of Amber* (1970) and Philip K. Dick's *Do Androids Dream of Electric Sheep?* (1968). This theme has also been explored in a number of television series. J. Michael Straczynski used the idea of erasing a person's episodic and

autobiographical memories via a mind-wipe as a form of capital punishment in the *Babylon 5* episode "Passing through Gethsemane" (3.4). This "death of personality" erased the convicted person's memories of the criminal self and reprogrammed the person to serve humankind. The person's memory, the very identity, was erased, and memories of a new identity were created. Joss Whedon also explored this idea in several episodes of *Buffy the Vampire Slayer*, notably including "Tabula Rasa" (6.8). The entire Season Five story arc of *Buffy* involved manipulated memories. Dawn was placed into the Slayer's family for protection, and memories of Dawn were created for Buffy, her mother, and the Scoobies. Even after Buffy learned that Dawn was The Key (to tearing down the boundaries between Earth and Hell) and thus not real ("No Place like Home" 5.5), she continued to *remember* events of their lives together, even though she *knew* that the memories were false (more about this distinction later). One could consider that this story arc foreshadows the theme underlying Whedon's series, *Dollhouse*, that memory can be programmed, wiped, and reprogrammed without seeming to leave a trace of such manipulations behind. Such an idea is appealing to many: just consider the interviews conducted with the "Man on the Street" (1.6). During this episode a reporter randomly interviews men and women to determine if they believe in the mysterious Dollhouse, whether such a place really exists or whether it is merely an urban legend, and if such a place does exist, whether it would hold any attractions, why or why not? Many of those interviewed could conceive of a world in which such manipulation would be useful, and indeed, even necessary. Each of the episodes of the two seasons screened presented both positive and negative examples of such manipulations. For example, a widower still in love with his wife could relive a dream day with her, a man whose daughter was kidnapped could receive help from the very best negotiator for her release, an obsessed collector could steal a priceless work of art, and a deranged hunter could stalk the ultimate prey, a human being. Nevertheless, the majority of [real] people do not wanted their memories erased and would consider that to be one of the worst fates to which they could succumb. Memories are what make us

who we are; we remember information about ourselves and these memories serve as our selves. Losing their memories, losing their selves, is a very real fear for many people, and unfortunately a very real possibility, given the incidence of diseases which produce cognitive deficits, such as Alzheimer's and other dementing diseases.

[3] Although memory loss is not inevitable with age, people fear that they will lose their memories as they grow older (see Halpern, 2008). Indeed, many people not only fear loss of memory, but fear the major pathological cause of memory loss: Alzheimer's disease. Some people will develop a dementing illness such as Alzheimer's: 13% of the population over the age of 65 present with symptoms of the disease (Alzheimer's Association, 2010). Some scientists state that all people over the age of 85 exhibit pathological signs of the disease (Schneider, Arvanitakis, Bang, & Bennett, 2007). However, these people do not necessarily exhibit the behavioral or cognitive symptoms of Alzheimer's. The fear that people feel over this issue is real because, at its heart, Alzheimer's disease slowly erases all memories that make someone the person he or she is. Eventually memories of family and self will disappear as will memories of motor programs that allow one to act upon the world (i.e., procedural memory) and the general knowledge of all one has learned about the world over the course of a lifetime (i.e., semantic memory). Stated simply, Alzheimer's disease destroys the three major types of memories that scientists have identified, and debated about, for several decades: episodic, semantic, and procedural memory.

[4] These types of memories have been identified based upon analysis of case studies of patients presenting with various kinds of brain damage. Such tragedies have given us much information on the processes that underlie the physiological basis as well as the cognitive and behavioral aspects of memory. Some of these patients experienced damage from illnesses such as encephalitis (e.g., Clive Wearing) and some of these patients experienced damage following surgical procedures (e.g., Henry M.). In the cases of Clive Wearing (Sacks, 2007) and Henry M. (Hilts, 1995), both of whom suffered massive damage to the temporal lobes, particularly the hippocampi, each

experienced an almost total anterograde amnesia, or memory loss for events occurring subsequent to their trauma. Each did retain memory of events prior to the trauma, although such memories were not necessarily directly accessible (more about this later). Actives in the various Dollhouses not only experience the loss of their memory for events occurring prior to their entrance into the program (i.e., retrograde amnesia), but they are promised anterograde amnesia as well. That is, any memories from events occurring during their tenure in the Dollhouses also will be erased at the conclusion of their contracts. We will learn that this is a promise that cannot be kept, as memory is not as easily manipulated as programmers such as Topher would wish and that different types of memories have different properties.

[5] One of the simplest ways in which to distinguish memories is on the basis of the types of information held (for an introduction to the material in this paragraph see Hunt & Ellis, 2004). Episodic memories, or memories of specific episodes, include all memories that take place in a person's presence. They also include autobiographical memories or the memories of a person's life. Episodic memories are organized according to time and their retrieval requires conscious effort. For example, what were you doing last weekend? Most people have to stop and think to find the answer in their memories. Cognitive psychologists state that episodic memories are those that we remember, as in "I remember that was the weekend I lost my voice because I was getting sick." Semantic memories on the other hand are our general knowledge stores, basically our dictionaries, encyclopedias, and hard drives (depending upon which metaphor you prefer to use). These memories are organized conceptually and are accessed automatically. For example, you do not have to consciously access your memory for the meaning of the words you are reading; you do so automatically. Cognitive psychologists state that semantic memories are those that we know, as in "I know that many people get laryngitis when they get sick." Finally, procedural memories are our "how to" memories, that is, our memory of how to do something, our skills. These memories are stored as motor patterns and, with experience, their production

becomes increasingly automatic. Examples of this type of memory are walking, driving a car, dancing, dialing a phone. If I talk about my first car, you can remember your first car as I discuss mine. We remember our first driving experiences and know how to drive those first and subsequent cars. We can carry on a conversation because we share a common language and many common experiences that the words access.

[6] One further distinction that can be made with respect to memory is whether we intend to remember the information or not. If we intend to remember a prior event, or we are aware that we are experiencing an event that occurred previously, then such memories can be said to be *explicit*. On the other hand, if we do not intend to remember a prior event, or if we are unaware that we are experiencing an event that occurred previously, then such memories can be said to be *implicit*. Recall of procedural and semantic memories is thus implicit, whereas recall of episodic memories is explicit.

[7] With engaging plots that provided much food for thought, Whedon and his writers, nevertheless, made several errors with respect to the ways in which the brain works and the ways in which memory was depicted and manipulated in *Dollhouse*. For example, the Actives exhibit some basic memories although their memories supposedly have been wiped. They answer to their names, albeit their "Active" names. They understand language as evidenced by their ability to talk and understand what is said to them. They also remember basic motor programs. That is, they can all walk and talk and engage in other activities designed to keep their bodies supple (e.g., yoga) and provide them some basic mental stimulation (e.g., painting). Victor's growing love for Sierra is manifested in a "man reaction"; that is, he experiences an erection whenever he sees her naked ("True Believer" 1.5), an example of procedural memory. A more chilling example is Sierra's reaction to Victor's touch in "Man on the Street." She screams when he places his hand on her shoulder, a reaction that leads to the discovery that she has been raped by her handler, Hearn. In the episode "Needs" (1.8), Echo notes that she can remember information such as the days of the week and the capital of

Nebraska, but nothing about herself. In Season Two, when Victor's contract with Rossum expires and he is re-integrated into the "real" world, vestiges of his Dollhouse imprinting bleed into his life. For example, he cannot sleep in a bed. Instead he takes his pillow and blanket off the bed in his room and sleeps in his bathtub, which physically resembles the sleeping pods in the Dollhouse ("Stop-Loss" 2.9). Examples such as these indicate that the Rossum Corporation is manipulating only the Actives' episodic memories, wiping any memories of the original personality. Although an intriguing idea, destroying one type of memory without affecting other types does not appear possible. Even brain-damaged patients continue to have memories of their lives prior to their trauma, even if they can no longer create new explicit memories.

[8] However, in one respect, Whedon and the other writers depicted the reality of the neural basis of memory. As the series progressed through Season One it became increasingly clear that Echo was remembering information from her past imprints, a programming impossibility according to the Rossum Corporation. Theoretically, an Active's true personality is to be wiped "clean," downloaded onto a disk and stored until the Active's contract with Rossum is terminated. During the 5-year contracting period an Active is designed to be imprinted multiple times, usually with a new personality. No "bleed through" is supposed to occur between imprints. Each Active is to be imprinted with the requested personality and then wiped clean after a time period specified by the client. However, Echo clearly shows awareness of those implanted personalities, as well as her original, primary personality.

[9] In the episode "A Spy in the House of Love" (1.9), the suggestion is made that there is a mole in the Dollhouse and that this person has tampered with Echo's program. Episodes prior to this one show that Echo is already remembering bits and pieces of previous imprints; we do not learn the identity of the mole or the mole's true purpose until later in Season Two ("The Hollow Men" 2.12). A complete review of the theoretical basis of Echo's "awakening" is beyond the scope of this paper; however, memories are constructed through

association. Memories become associated with each other for a variety of reasons and are stored as vast networks of memories. Activating one memory in turn activates a host of other memories associated with that event through a spreading activation. For example, memories of my first car will activate memories of the day my mother drove it home because I could not drive a straight-drive, which will activate the memory of my mother, which will activate memories of a life-time spent with my mother, which will activate other memories of my life-time, et cetera. Thus as Echo remembers one piece of information, she will increasingly remember other pieces, despite the best efforts of Topher and his attempts to wipe and re-implant memories as requested by Echo's clientele.

[10] This is especially evident in the Season Two episode "Vows" (2.1). Although Echo remembers Whiskey when encountering her early in the episode and even talks to her about Whiskey's past ("You were number 1."), it is the blow to the head Echo receives at the hands of her client "husband" Martin Klar that affects her memory. As he repeatedly hits her, Echo begins to see flashes of her previous imprints. Echo tries to reassure him that she is really his wife, but ends up saying "I will always be Eleanor Penn." Of course, that is the wrong imprint, which Echo realizes as soon as she says it. Later on, when she is back in the Dollhouse, she speaks with her handler, former FBI agent Paul Ballard about her memories of the imprints. She tells him that she is lost, that she does not know who or what is real. Echo is remembering information from the women she has been with her various clients. That is, episodic memories of these women have been created and stored in her brain. They have not been wiped clean, and the fact that she can access these memories of her "selves" leaves her with a sense of fragmentation. She has no clear memory of a specific self, but rather memories of multiple selves. Her semantic memory is intact as well; however, recall that semantic memory is generalized knowledge. Echo knows that she has been, and is being, programmed repeatedly, but these memories are not personal, i.e. episodic, memories of her self. Indeed she has some problems with the reality of

the memories as well. And that is another flaw in the way that memory is presented on *Dollhouse*.

[11] This flaw is the very real inability that we possess of knowing whether our memories are actually accurate. Numerous research studies have demonstrated the fallibility of memory and the ease with which false memories can be created (Loftus, 1997). We know that memories are reconstructed with use, which means that any memory may not actually be "real." That is, are the memories that I have of any childhood event real or have I recreated those memories to coincide with what I thought was true, or what I believed was true, or what I hoped was true? When Echo and the other Actives are imprinted with another person's memories, it is presumed that that person's memories are their actual, "real" memories. Once again, given the ease with which false memories can be created, this assumption may not be true. The episode "Ghost" (1.1) illustrates this fact quite clearly (more about this later).

[12] "Ghost," the first episode of the series, introduces us to the imprinting procedures used in the Dollhouse. Whenever an Active is requested for an assignment, she or he receives a "treatment" in which the requested personality is imprinted upon her or his brain. It is apparently painful to wipe and insert memories, as witnessed by the facial expressions and vocalizations of the Actives. Given that the brain has no pain receptors there should be no pain in the process. Memory of the treatment itself is apparently forgotten also, as evidenced by the Actives' question "Did I fall asleep?" after each wipe. We know that Echo is different from the other Actives when we see her walk up the stairs to watch Sierra's programming. Her facial expressions let us know that she is aware that something is happening, even if, at this point, she is unsure of what it is. Wiping an Active's memory is compared to cleaning a slate, as if one were erasing all the information on that slate. As Echo's original personality Caroline notes, however, you cannot clean a slate ("Ghost"); you can always see what has been written prior to the erasure. The metaphor is reinforced in "A Love Supreme" (2.8) when Joel Mynor notes that you can never delete a program: "Once it exists, it's alive."

[13] *Dollhouse*'s Actives are programmable people; they are "made to order." Topher, their programmer, considers himself to be "the man behind the gray matter curtain" ("The Target" 1.2), referring to the outer covering of the brain (the cerebral cortex, which consists of neuronal cell bodies that appears "gray" to the naked eye). Joss Whedon is fascinated by brains (Season One DVD Commentary), and *Dollhouse* has allowed him to speculate about the neurological basis of behavior and its potential for manipulation. The graphics used to illustrate the brain in "Man on the Street" (1.6) are quite real. Still, much of the neuroscience and neurology discussed in the program is not only not possible at this time but unlikely to be developed, given our current state of knowledge. However, one aspect of the series' programming is within the realm of possibility, and that concerns the pharmacological manipulation of behavior. Drugs that have effects on memory have been featured on a couple of episodes of *Dollhouse*.

[14] Echo begins remembering events from her past in the episode "The Target" after her client, Richard Connell, drugs her. His plan is to make her more malleable and more easily hunted, and he almost succeeds. The episode "Echoes" (1.7) centers on a drug N7316, created by the Rossum Corporation. N7316 is a memory drug that works by breaking down natural inhibitions in the hippocampus to awaken the "sleeping" parts of the brain. According to Rossum, the drug is still in its experimental stage. Phase I intake produces giddiness and light hallucinations, making it euphorogenic. Phase II intake results in a complete loss of impulse control. According to Topher, the drug supposedly acts by "attacking the inhibitory centers in the hippocampus, breaking down repressed memory blocks." This causes the user to experience a memory glitch, which is especially troubling when the Actives, particularly Echo, begin recovering their memories of lives before the Dollhouse. The fact that the Actives begin remembering those lives speaks to my earlier comment about the spreading activation of memory. As a memory is accessed, it will lead to other memories, which will lead to still more memories, et cetera. A useful metaphor might be to think of this spreading activation as a snowball rolling down a hill. It may start small, but as it rolls, it will

get larger and larger, and as it gets larger, it may become dangerous. This is certainly the case with Echo; she has already begun remembering her life as Caroline, and the N7316 enables Echo to access even more of Caroline's memories. This episode ends with the suggestion that the drug's effects have dissipated; but it seems that this is not the case, at least with respect to Echo.

[15] Whedon's commentary on "Man on the Street" notes that we are a society in love with drugs. We use these drugs "to help us focus, be less depressed, and help us in every way, and more and more drugs [that] can target areas of memory. People's response to this is to give me those drugs." He is correct. We do indeed have drugs to help us focus (e.g., Ritalin, nicotine), be less depressed (e.g., SSRI's), and help us in every way (e.g., anti-anxiety drugs, anti-hypertensives, anti-cholesterols, anti-fat, alcohol, opiates, etc). And yes we do have drugs that affect memory, such as Aricept, the function of which is to delay the inevitable memory loss accompanying advanced Alzheimer's disease. Presumably Rossum's intention with respect to N7316 is to make it easier to program their Actives. However, a major advantage would be to mass-produce the drugs and make them available to the general population. It is clear that Rossum Corporation is making large amounts of money from their clients who use the Actives from the various Dollhouses. Nevertheless, the costs associated with maintaining the various Dollhouses must be astronomical. The initial costs associated with creating a drug with the capability of controlling memory would also be astronomical; however, the ultimate profits would be staggering as people bought and used the drug in their attempts to, as Whedon states, cut "out the part of us that causes pain…to be the best version of themselves that they can be." It does not take much stretch of the imagination to realize that a drug that can break down memory blocks (i.e., allow access to every memory stored in one's brain), could have powerful repercussions, not only for the person who wants access to those memories, but to the person who can gain that access also. There would be no secrets, and potentially catastrophic events, as explored in "Ghost," would not happen. *Dollhouse* programmers, such as Topher Brink and Bennett Halverson,

would have easier jobs in the sense that the Actives could perhaps be imprinted more easily and less painfully.[2]

[16] One reason for *Dollhouse* programmers' ease in imprinting the Actives may have to do with neural plasticity. Plasticity refers to the brain's ability to mold itself over the course of development. Increasingly, research indicates that even "older" brains, that is, brains beyond the age of maturity, which is roughly 25 years, are capable of rewiring and perhaps healing themselves after damage. The fact that the human brain itself is capable of being re-programmed may also underlie the assumptions of *Dollhouse*. Topher states that he is in "neuroplastic heaven" ("A Spy in the House of Love"), and several episodes feature Topher's manipulations of Echo's basic neural processing. For example, in "Ghost" Echo is imprinted with a near-sighted hostage negotiator named Eleanor Penn. For this mission, Echo wears glasses and truly cannot see without them. Topher states that he can mess up the neural connections to her eyesight and change the way that her brain processes information. Indeed, he states that he can make her whatever *he* wants her to be. Later, in "True Believer" Topher operates on Echo, inserting a camera into her visual system. Visual information perceived by her eyes bypasses her cortex–she is in effect rendered blind–but the signals are in actuality being recorded and broadcast back to the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF). In Season Two's "Belle Chose" (2.3) Topher tries a remote wipe of Victor, much as Alpha had done to Echo in the Season One episode "Gray Hour" (1.4). The nephew of one of the Dollhouse's patrons, a man named Terry, has been seriously injured. Terry is in a coma and, as Topher maps Terry's brain, he discovers that Terry is a psychopath who has abducted several women. Victor is being imprinted with Terry's memories in an attempt to rescue these women. Terry escapes from the Dollhouse with the aid of his uncle, whom he subsequently injures. Terry's escape leads Topher to try a remote mind wipe which only succeeds in having Echo and Victor exchange imprints. Echo attempts to complete Terry's murderous urges, and she almost succeeds. This episode's end lets us know that Echo has retained Terry's memories of violence. The emotions that accompany those

memories–the rage against his mother, the sexual excitement he feels when engaging in violence–are intense and emotional memories that are very easily accessed.

[17] Echo's recovered memories are extremely strong and emotional. These types of memories are apparently not as easily wiped as Topher thinks. In "Ghost" Miss Penn is confronted with the man who sexually assaulted her when she was a child. Miss Penn's fear of this man almost overpowers Echo's programming. The fact that Miss Penn had been sexually assaulted as a child was not part of her file and thus could not be downloaded into an imprint. And, if the Dollhouse programmers create artificial memories that serve to augment an Active's imprint, then traumatic memories that have perhaps been repressed by the primary might bleed through those artificial imprints. If someone's memories are not accurately "recorded," then the inaccurate memories would be downloaded and imprinted on an Active rather than the actual memories or the memories that imprinters create.

[18] As Season One continues we observe other instances of Caroline or Echo's memories bleeding into Echo's current program. All of these memories are extremely strong and intensely personal. At various times Echo remembers Alpha's massacre ("The Target"), Dominick's attempt to kill her ("True Believer"), and the death of her lover ("Echoes"). Even Boyd is aware of the correlation between strong emotions and imprint disruption ("A Love Supreme"). Each of these examples provides evidence of the difficulty of programming or reprogramming memories, especially those that involve strong emotions, such as love, anger, or fear.

[19] Emotional memories are mediated by a subcortical area of the brain known as the amygdala (LaBar, 2007; LeDoux, 1996). The amygdalae are located at the anterior ends of the hippocampi, in the temporal lobes. It is the hippocampus that apparently transfers short-term memory into the long-term stores, and it is this part of the brain that is damaged in patients with anterograde amnesia. Patients with temporal lobe damage also frequently experience uncontrollable anger

and even rages, presumably because their amygdalae are also damaged, or the connections between the amygdalae and cortical areas mediating rational thought are damaged.[3] The amygdala and the hippocampus are part of the limbic system, a set of subcortical structures comprising an emotional circuit responsive to primitive emotions, such as fear (Kandel, Schwartz, & Jessell, 2000). When Echo awakens in "The Target" and realizes that Richard is hunting her, she experiences the typical fight-or-flight endocrine response. The sheer amount of stress hormones flooding her body initially interferes with her ability to respond rationally to the threat. These naturally-occurring chemicals in conjunction with the drugs given to Echo by Richard begin to interfere with the neural imprints created by Topher. Research increasingly indicates that the chemicals released by the body interfere with memory (for a very brief discussion of this see Lemonick, 2009). What this episode also demonstrates is that memories are stored physically, that the memory trace of any event, piece of information, or program is stored as a physical locus that cannot be erased as easily as one would wish. Perhaps what Topher is actually doing is not so much wiping the Active's memories as rendering the Active's memories inaccessible. In other words, the memories are not wiped prior to, and following, an imprint. Instead they are simply blocked from conscious access. Echo may not remember her life as Miss Penn or Kiki, but she can occasionally use the information learned from those imprints to help her solve problems. Data from patients with brain damage support this hypothesis. Although patients such as Clive Wearing and Henry M. cannot create new explicit memories, continued observation and study of these patients indicate that their memories prior to their trauma are intact and, in some instances, they can create new implicit memories. Henry M. cannot tell someone how to find the restroom in his nursing home, for example, but he can show them where it is.

[20] As Season Two progresses, Echo is increasingly revealed as someone and something new. Whereas the Rossum Corporation is increasingly vying for power and control of an unsuspecting population, their manipulations are having consequences of which they are

unaware. Echo, while special, is something new and something unanticipated. Echo increasingly remembers her previous imprints and can make use of the information imprinted upon her. In the episode "Meet Jane Doe" (2.7) Echo uses memories from her Active past to allow her to escape from the prison and free Galena. As Echo and Paul talk, she mentions that she has 36 personalities, and she tells Paul about some of them (e.g., seven of the imprints were gay). But although Echo has some flashes of memories of Caroline, she does not have them all. Echo is determined to obtain these missing memories even though she is leery of what she will find. Her torture by Bennett ("The Left Hand" 2.6), as well as her flashes of Caroline, increasingly indicate that Caroline was not a nice person. For example, she befriended Bennett primarily to obtain her security clearance for the Rossum Corporation's laboratory and then left her to suffer after the bomb they planted exploded ("Getting Closer" 2.11).[4] Knowledge such as this worries Echo: she wonders about recovering Caroline's memories. She is especially concerned about what will happen to this new entity named Echo when Caroline returns.

[21] Topher is quite taken with Bennett, his counterpart in the DC office. She is beautiful and nearly as intelligent as he is, he thinks. As they discuss various details of the imprinting process, Topher notes that Senator Daniel Perrin is in actuality a hybrid. He has had a replacement imprint superimposed upon his existing mind: in effect, his imprint has been "married to an existing consciousness" ("The Left Hand"). Topher wonders whether such a procedure would make the person schizophrenic, and Bennett states her belief that the human mind is capable of containing multiple consciousnesses. When Topher asks whether she means a composite person, Bennett replies no, stating that the result would be "something new, something better." In this episode we are unclear if Bennett is speaking from experience, as her behavior is decidedly odd. It does seem as if she is unaware that Echo might be one of those "new, composite beings," who are capable of holding multiple consciousnesses, i.e., multiple memories, in their minds.

[22] One thread in this episode and others involving Echo and her awareness of those multiple episodic memories has to do with the concept of schizophrenia. Although the word "schizophrenia" means split personality, the condition is not understood by the average person and is frequently referenced incorrectly. People with schizophrenia experience a split, a disconnection, between their thoughts and their emotions (American Psychiatric Association [*DSM-IV-TR*], 2000). Their thoughts are frequently disorganized and delusional. Their emotions are flattened and inappropriate for the situations. Schizophrenics do not have separate, dual, or multiple personalities. That condition is referred to as Dissociative Identity Disorder (DID) today; it was once called Multiple Personality Disorder (MPD). There is controversy about this condition; many doctors doubt its existence. Patients with DID usually are not aware of the condition. Hence, Topher's use of the term "schizophrenia" in reference to Actives with the awareness of multiple consciousnesses is incorrect. We know that Alpha and Echo are both aware of these multiple personas. We also know that Whiskey is becoming increasingly aware; she remembers that she was once the most requested Active and that Alpha hurt her so that Echo could be "Number 1" ("Vows"). But all three know that they are different somehow, something new. Whiskey/Claire Saunders says, "I am in someone else's body and I'm afraid to give it up" ("Vows"). Her angst concerns whether she will continue to exist and she flees the Dollhouse for some time rather than relinquish this new self. Alpha is so determined not to lose his new self that he destroyed his "primary" (i.e., original) personality ("Omega" 1.12). Echo, although much more stable psychologically than Alpha or Whiskey, says that she is "not real. I'm not who I think I am" ("The Public Eye" 2.5) and later "I'm afraid of Caroline. If she comes back, where will I go?" ("The Left Hand"). Echo and Caroline are able to resolve this conundrum and coexist ("Epitaph Two: Return" 2.13), although one could argue that it is their desire to destroy the Rossum Corporation's stranglehold on the world that allows for Echo's acceptance of the Caroline persona, and vice versa. Both of them are needed to restore humanity to its pre-imprinting reality.

[23] The premise underlying Joss Whedon's *Dollhouse* concerned whether human memory could be manipulated in such a way as to delete previously stored memories, implant new memories, or create artificial memories. Those people who entered the Dollhouses wishing to escape from the pain and suffering in their lives, such as Whiskey and November, could have those painful memories excised and new, less painful memories created. Other Actives, such as Sierra, who were forced into servitude by a rejected lover ("Belonging" 2.4), would have the memory of her abuse at this man's hands erased but would have memories of her life prior to her entry into the Dollhouse erased also. Echo, devastated by the death of her lover, volunteered to have the memory of her loss erased; however, given that she was facing imprisonment, she could not actually be said to "volunteer." Although a premise that some might envision as helpful in certain circumstances ("Man on the Street"), many people cannot conceive of the reality of losing their memories nor would they want to. Patients presenting with traumatic brain injuries or diseases such as Alzheimer's, with the concomitant amnesia, serve to illustrate the devastation such memory loss brings to its victims.

[24] As with other works in Joss Whedon's oeuvre, *Dollhouse* can be analyzed on many levels. This series can be read as an intellectual exercise in how memories might be manipulated for both nefarious (e.g., stealing artworks) and altruistic (e.g., rescuing kidnapped children) purposes, and how such manipulations might affect those involved. Although Whedon and the other writers on *Dollhouse* made several errors with respect to the ways in which memory was depicted, they also presented several instances of the reality of the neural basis of memory. However, neither the errors nor the reality seriously detract from the provocative story-telling. As with all of Whedon's work, we bring our own subtext to our analysis of *Dollhouse*.

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[1] Portions of this paper were presented at The Slayage Conference on the Whedonverses 4, held June 2010 at Flagler College, St. Augustine, Florida.

[2] As I indicated earlier there are no pain receptors in the brain. However, one could argue that the pain that the Actives experience during an imprint occurs as a result of memory blocks being destroyed. In other words the Actives would be feeling psychic not physical pain.

[3] Whedon explored neurological damage in his short-lived series *Firefly* (2002) and its sequel motion picture *Serenity* (2005). River Tam suffered experimental brain surgery at the hands of government scientists. According to her brother, Dr. Simon Tam, the scientists stripped (i.e., ablated) her amygdala. However, symptoms displayed by River are not those which would occur normally following amygdalar damage. See Daniels (2007) and Ginn (2010) for a discussion of this issue.

[4] Echo will learn later what really happened that night, once again confirming the fallibility of memory. After she and Bennett break into Rossum's headquarters to set the bomb, Caroline discovers that people are still in the building. Trying to delay her and Bennett's departure so that no one will be harmed, Caroline declares that she will be the only one caught. Unfortunately Bennett is trapped under the rubble when the explosion occurs. Before leaving her, Caroline tells Bennett to claim she was in the building because she was working late. This ploy apparently works as Bennett is hired for a high-ranking position at Rossum, whereas Caroline is indeed trapped.