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FORM C
COLLEGE SCHOLARS PROJECT APPROVAL

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Changes in Serotonergic Receptors in the Suprachiasmatic Nucleus
Project Title

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Changes in Serotonergic Receptors in the Suprachiasmatic Nucleus

A Senior Project Presented for the
College Scholars Program
The University of Tennessee, Knoxville

Mona Ambika Gupta
December 2004

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Chapter 1

Background and Significance

Importance of Circadian Rhythms

Organisms must maximize their chances of survival by acclimating themselves to their environment. Because the earth follows a twenty-four rotation period with corresponding periods of light and dark, the body's internal oscillation must closely mimic this time frame in order to entrain stably to its environment (Dunlap et al., 2004). Biological processes or activities that repeat consistently approximately every 24 hours and continue in a constant environment are termed circadian rhythms (Refinetti, 2000).

These circadian bodily oscillations are innate because animals raised from birth in constant light or dark exhibit free-running periods that approximate 24 hours even though they have never experienced light and dark cycles. Organisms' free-running periods, circadian rhythms exhibited in a constant environment, vary from about 23 to 25 hours, which again indicates that these endogenous rhythms are innate and caused by some genetic factors rather than acquired learning. Species living in the same environments as one another have different and internally consistent circadian rhythm periods, which reinforces the idea of genetic cause. This was observed in mutant hamsters with the *tau* allele, who experienced a phase advance for every mutant allele that they had. So, normal hamsters had a period of 24 hours, those with one *tau* allele had a 22 hour period, and homozygote *tau* mutants had a free-running period of 20 hours (Dunlap et al., 2004).

There are three defining criteria of circadian rhythms. The first one has just been described as a free-running period between 23 and 25 hours. The next criterion is that circadian rhythms must be temperature compensated so that at different ambient temperatures the length of

the oscillation should remain stable. This is necessary so that the clock does not run faster or slower following temperature changes. The final criterion is that these circadian rhythms must be able to entrain to 24-hour environmental cues such as light-dark cycles, and temperature cues (Dunlap et al., 2004). While there has not been enough research done yet, it is often believed that circadian rhythms are ubiquitous and present in all species. It has been established however, that not all species are as precise as others, and specifically nocturnal animals are more consistent in their circadian rhythm periods than diurnal ones (Dunlap et al., 2004).

The importance of an internal oscillator is seen in hibernating animals because their compulsory physiological processes must continue in a regular and predictable rhythm even when not exposed to a daily environmental time cue such as light-dark cycles (Dunlap et al., 2004). Circadian rhythms within an organism do not free run separately; sleep-wake cycles, temperature cycles, and metabolic cycles remain in synch with each other. For example, sleepiness is associated with the trough in the daily temperature cycle. This decrease in internal temperature and onset of sleepiness occur before any decrease in the level of motor activity (Refinetti, 2000).

The endocrine system also displays circadian rhythms that oscillate with the sleep-wake cycle in organisms. Prior to waking, the hypothalamo-pituitary-adrenal axis is activated to raise the levels of corticosteroids released by the adrenal gland. The level of corticosteroids peaks in the early morning and steadily declines until nighttime, and thus high levels are associated with activity. In nocturnal rodents, high levels of corticosteroids are seen in the early night, which is in keeping with these particular animals' onset of heightened activity. During circadian nighttime, nocturnal and diurnal animals' pineal gland releases the hormone melatonin, which among other activities regulates seasonal reproductive status (Redfern & Lemmer, 1997).

Circadian rhythms, combined with ovarian timers, have also been observed in the estrous cycle of mammals. Because female rodents produce viable eggs in a cyclical manner, there is a period during the cycle in which reproductive success is the highest. To maximize the chance of having viable offspring, the rodents must have appropriate cycling of their ovulation and sexual activity. In hamsters, the females ovulate every fourth day at around midday and the ruptured follicle releases progesterone, which enhances sexual activity during the following night. This is necessary because nocturnal female and male hamsters have the most chance of contact at night. Thus, the light-dark entrainment of the circadian pacemaker allows this process to occur consistently (Dunlap et al., 2004).

The importance of circadian rhythms is also seen in the cell division cycle (CDC). Cyclic AMP may play a coupling role between certain steps in the CDC and particular phases in the circadian cycle. This idea may explain why certain drugs that interfere with the cell division cycle are more effective at certain times in an organism's circadian period. The sensitivity of cells to many cytostatic drugs and ionizing radiation is "highly cell-stage specific" (Redfern & Lemmer, 1997). Varying drug administration throughout the 24 hour circadian period can promote the well-being of the patient while reducing his or her risk factors. The tolerance of the patient to the medicine is maximized through a "temporal shielding of normal, healthy tissues" (Redfern & Lemmer, 1997).

For humans, traveling across time zones can cause jet lag, which also calls attention to circadian rhythms. When traveling to regions with a delayed or advanced light-dark cycle, the cycles of body temperature, feeding and drinking, and activity entrain to the new time at separate rates. It has been determined that on average, it takes slightly less than one circadian day to re-entrain the body following travel across each time zone. While the most common treatment used

for jet lag is simply waiting for the gradual phase shift caused by the new light-dark cycle to occur, other methods have been investigated for use when this natural process must be expedited. Light pulses can phase shift the circadian pacemaker rapidly so that it synchronizes with its new environment. Alternatively, melatonin can be administered before the desired sleep time to induce sleepiness and shift the clock (Refinetti, 2000).

The Suprachiasmatic Nucleus

The circadian pacemaker controls all the circadian rhythms in an organism. The circadian clock in mammals has been located to the Suprachiasmatic Nucleus (SCN) due to several reasons. Removal or permanent damage to the SCN leads to a permanent loss of most overt free running circadian rhythms. If part of the SCN is removed and at least ten-percent of it remains intact, normal rhythmicity is maintained (Dunlap et al., 2004). When the SCN is disconnected from the rest of the brain, the nuclei continue their rhythmic electrical activity (Redfern & Lemmer, 1997). If an adult animal rendered arrhythmic due to SCN removal has SCN tissue from a donor fetus transplanted into its brain, the circadian rhythmicity characteristic of the donor animal's genotype is restored in the recipient. Individual SCN cells isolated *in vitro* under cell culture conditions display free-running circadian rhythms for some time (Dunlap et al., 2004). These cells display a range of periods, while the SCN exhibits a period that is the average of its cells (Refinetti 2000). The rhythmic release of peptidergic secretion and electrical activity by the SCN cells *in vitro* also continues and can be phase shifted by environmental cues (Redfern & Lemmer, 1997).

The two ovoid nuclei of the SCN are located in the ventral hypothalamus on either side of the third ventricle's base, directly above the optic chiasm (Redfern & Lemmer, 1997; Dunlap et al., 2004). "Their morphology is conserved across mammals, including man" (Redfern &

Lemmer, 1997). The approximately 16,000 SCN neurons are very small compared to those in most of the rest of the brain. Structurally the SCN consists of a shell that lies dorsal to a core, which is in a ventrolateral position (Dunlap et al., 2004). Peptidergic neurons are a large proportion of those in the SCN, including neurons immunoreactive for Arginine vasopressin (AVP) in the shell, Gastrin-releasing peptide (GRP), Vasoactive intestinal polypeptide (VIP) in the core, somatostatin and neurotensin (Redfern & Lemmer, 1997). Which of these neurons are essential to the workings of the pacemaker has not been established, however, "successful SCN grafts always contain some VIP-ir and AVP-ir" cells, leading to the possibility that these neurons are, or are closely related to, the ones critical to SCN function (Redfern & Lemmer, 1997). There is also a dense concentration of astrocytes, which are more immunoreactive for glial fibrillary protein (GFAP) than those in the rest of the hypothalamus. Astrocytes exhibit a circadian cycle in which they are more condensed and defined in early subjective night. Throughout the cycle, the astrocytes go through stages in which they define the borders of the SCN. While it has not been established, this circadian cycle exhibited by the astrocytes may be associated with the metabolic cycle of the SCN, which utilizes more glucose and oxygen during the subjective day. These astrocytes are in all parts of the nucleus but the immunoreactive (ir) neurons are arranged such that the ventrolateral portion of the SCN contains mostly VIP-ir and GRP-ir cells, while the SCN's dorsomedial section has AVP-ir neurons. For the majority of SCN neurons, in addition to having peptidergic transmitters, they are also GABAergic (they react with the neurotransmitter GABA) (Redfern & Lemmer, 1997).

Several genes have been identified that play a role in circadian rhythm expression. The expression of *period* (*per*) gene mRNA oscillates with a circadian period. The PER protein translated from the *per*-mRNA then forms a feedback loop with the *per* gene to down regulate its

expression. This *per*→PER loop may play a role in the pacemaker's oscillator mechanism, an idea that is supported by the fact that depletion in PER protein inhibits the SCN's function (Redfern & Lemmer, 1997; Refinetti, 2000). The homologs of the *per* gene in humans are *Per1*, *Per2*, and *Per3,* whose RNA levels display circadian rhythmicity in the SCN. During subjective night the levels of *Per1*-mRNA and *Per2*-mRNA are increased following photic stimulation (Refinetti, 2000).

In mice there is a semidominant gene called *clock,* that, when mutated, can lengthen the circadian period from the normal 23.3 hours. When one mutant allele is expressed, the circadian period is extended to 24.4 hours and if the mouse is a homozygote for the mutant gene, it has a circadian period of about 27.3 hours (Refinetti, 2000). Comparison of the major genetic components that contribute to the circadian clock shows high conservation between both vertebrates and invertebrates (Refinetti, 2000).

Afferent Connections to the SCN (Refer to Figure 1)

Three major afferent connections to the SCN can regulate its activity and shift the circadian clock. The primary input to the SCN comes from its only photic sensor, the retina, by way of the retinohypothalamic tract (RHT). Photic entrainment of the SCN is primarily regulated by the RHT input (Refinetti, 2000; Dunlap, et al., 2004). From the intergeniculate leaflet (IGL) of the lateral geniculate nucleus (LGN) in the thalamus, there is a projection called the Geniculo-hypothalamic tract (GHT), which also terminates in the SCN's core (Refinetti, 2000; Redfern & Lemmer, 1997). The GHT also contributes some retinal input that has been modified in the geniculate body to the circadian clock. This retinal input could increase the sensitivity of the SCN to light input from the primary photic relay the RHT. The neurotransmitter associated with the GHT is Neuropeptide Y (NPY), and its Neuropeptide Y –

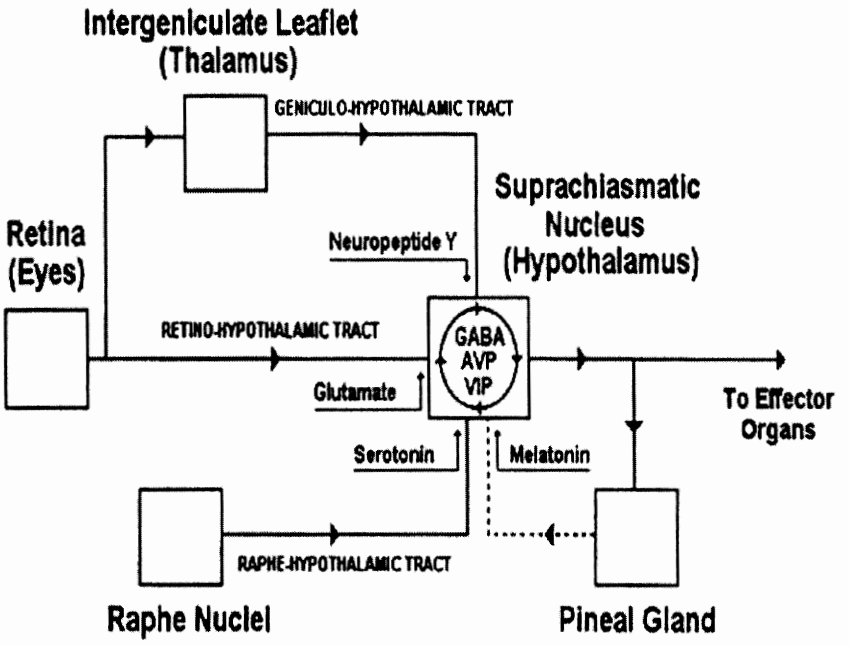

Figure 1: Afferent Connections to the SCN (From Refinetti, 2000)

immunoreactive fibers and terminals overlap in the ventrolateral core of the SCN with some of the afferent direct retinal and serotonergic afferents. There is evidence to suggest that this neurotransmitter is involved in non-photic entrainment of the animal (Redfern & Lemmer, 1997; Dunlap et al., 2004). Nonphotic cues all involve changing the arousal state of the animal (Redfern & Lemmer, 1997). Examples of nonphotic entraining cues for animals include forced exercise, running wheel availability (for exercise), and handling stress (Refinetti, 2000; Redfern & Lemmer, 1997).

The serotonergic afferents to the pacemaker come from the Raphe Nuclei in the midbrain. There is also a projection from the raphe nuclei to the intergeniculate nucleus so that the raphe may modify the photic information that the IGL carries (Dunlap et al., 2004). As with the RHT and geniculo-hypothalamic tract, the raphe input also projects to the core of the SCN. The retinal input to the raphe nuclei is secondary to the raphe nuclei's role in relaying information on the general arousal state of the animal. The raphe nuclei use the neurotransmitter serotonin to accomplish this task. Serotonergic fibers and terminals are present in the SCN at a higher density than in the surrounding hypothalamus. While the raphe nuclei are not necessary for circadian rhythms to occur, they can modulate the clock's activity through entrainment to non-photic arousing stimuli. It may also modulate certain photic responses of the pacemaker (Redfern & Lemmer, 1997). Serotonin agonists have been found to "attenuate the electrophysiological responses of the SCN to stimulation of the optic nerve, and the light-induced phase advances of hamster activity rhythms are reduced if the animals are active during the interval of illumination" (Redfern & Lemmer, 1997). Interaction between the afferent inputs to the SCN is apparent.

Efferent Connections to the SCN

The SCN makes connections throughout the brain to control various circadian rhythms. For instance, the sleep-wake cycle and daily temperature cycle are closely linked so that the trough of the temperature cycle correlates with sleep. Neural connections exist between sleep centers of the midbrain's reticular formation, in the pons and medulla, and the SCN. The reticular formation projects to the spinal cord and has a role in regulating muscle tone, reflexes, and transmission of sensory information. Reticular formation input to the forebrain influence consciousness and the pattern of sleep. The regulation of body temperature exhibits the clock's control over the balance between heat loss and generation through neural connections. Regulating the association between the sleep-wake cycle and the body temperature cycle is controlled in part by changes in basal metabolic rate, which suggests that the circadian pacemaker communicates with parts of the autonomic nervous system that regulates metabolism (Dunlap et al., 2004).

Many hormonal release cycles are also controlled in part by the SCN. Through a neural connection to another region of the hypothalamus, the SCN controls the production of corticotropic-releasing hormone. The daily release of this hormone influences the anterior pituitary's circadian release of adrenocorticotropic hormone. The rhythmic secretion of glucocorticosteroids and minerocorticosteroids from the adrenal cortex is in turn regulated by adrenocorticotropic hormone. Many mammalian physiological functions depend on these steroid hormones (Dunlap et al., 2004).

Entrainment of the SCN

The act of imposing an external oscillation frequency on the internal pacemaker is entrainment. "Entrainment of the circadian clock provides an internal estimate of external local time" (Dunlap et al., 2004). The physiological time that an organism experiences is only indirectly an effect of the current external time, and conversely is directly a result of its own timekeeper. To accurately estimate local time, the internal pacemaker entrains to the 24-hour external cycle of the earth's rotation. There are two criteria used to determine whether an external time cue has actually entrained the internal pacemaker. The first is that the period of the entraining agent's rhythm must correlate with that of the SCN. The second decisive factor states that even after returning to an environment with constant conditions, the animal will free-run beginning with a circadian period that compares to the entraining agent's (Dunlap et al., 2004).

Light pulses administered to an animal have been found to phase shift the circadian rhythm, they cause "delays during early subjective night and advances during late subjective night" (Refinetti, 2000). The neurotransmitter involved in photic entrainment is glutamate. Stimulation of the optic nerve leads to a release of glutamate in the SCN and dose dependent phase shifts, similar to those seen following a light pulse. Conversely, glutamate antagonists (external agents that stop the cell from responding to glutamate) block these phase shift responses. Retinal terminals in the SCN have also been found to be immunoreactive for glutamate (Redfern & Lemmer, 1997; Refinetti, 2000).

Photic stimulation has also been found to phosphorylate and activate the *c-fos* immediate early gene to produce the Fos protein in the SCN. The expression of *fos* gene is mediated by cyclic adenosine monophosphate response element (CREB), which is phosphorylated and activated when the organism experiences light pulses that induce phase shifts of the circadian

clock. After synthesis, the Fos protein can enter the nucleus to regulate various late response genes' transcription (Refinetti, 2000).

The geniculo-hypothalamic tract (GHT) that runs from the intergeniculate leaflet of the thalamus to the core of the SCN in the hypothalamus relays photic information that it receives from the retina. The GHT however, is not necessary to entrainment the internal pacemaker to light-dark cycles. Neuropeptide Y is the pancreatic polypeptide hormone produced by the GHT neurons, and seems to be involved in the entrainment of the clock through nonphotic stimuli (Refinetti, 2000; Dunlap et al., 2004). Neuropeptide Y administration causes phase advances of the endogenous clock, presumably through the activation of protein kinase-C during the subjective day (Prosser, 2000).

Serotonergic Input to and Entrainment of the SCN

The raphe input to the SCN may also contribute to the entrainment of the clock to nonphotic stimuli. The raphe nuclei are not necessary for expression of circadian rhythms, yet seem to play a role in stabilizing and reinforcing the clock's actions (Dunlap et al., 2004; Prosser, 2000). It has been found that raphe nuclei lesions cause a dampening of the amplitude and regularity of wheel running rhythms and in constant darkness shorten the period of this activity. An increase in the aforementioned activities also probably increases the serotonergic activation in the forebrain (Redfern & Lemmer, 1997). The raphe acts largely to set the general arousal state of the animal through the release of serotonin (5-hydroxytryptamine; 5-HT) (Dunlap et al., 2004). The level of arousal is directly correlated with the level of activity seen in the serotonergic cells of the raphe nuclei (Redfern & Lemmer, 1997). In the SCN, 5-HT agonists (external agents that mimic the effects of 5-HT) administration causes phase shifts

characteristic of nonphotic stimuli; conversely, depletion in 5-HT levels inhibits the usual shortening of the circadian period caused by running wheel availability (Refinetti, 2000). Providing 5-HT or 5-HT agonists to the SCN *in vitro* during mid subjective day causes two to three hour advances (Refer to Figure 2 and Figure 3) in the period of the pacemaker, while this delays the clock when presented during subjective night (Prosser, 2003b; Prosser, 2000). The SCN neurons respond to 5-HT, in that they are more responsive to 5-HT during subjective night rather than during subjective day (Refinetti, 2000).

The actions of 5-HT (as well as other inputs to the clock) can be monitored using brain slices of the SCN. "The ability of the SCN pacemaker to continue generating circadian rhythms when isolated in a brain slice preparation or as dispersed cells underscores its endogenous nature" (Prosser, 2003b). Thus, the SCN continues to exhibit regular circadian rhythms and spontaneous neuronal electrical activity *in vitro*, with a peak in activity observed about six hours after lights-on (Prosser, 2003b; Prosser, 2000). *In vivo*, the mouse SCN free-runs with a period of about 23.5 hours and its period *in vitro* closely matches this at 24 hours (Prosser, 2003b). Through work on such slices, a signal transduction model has been established. Because 5-HT agonists such as (+)8-hydroxy-2-(di-n-propylamino) tetralin (DPAT) and quipazine cause phase advances that mimic those caused by 5-HT, and the 5-HT antagonist metergoline opposes these advances, these compounds are used in *in vitro* experiments. However, these chemicals do not produce an effect during nighttime administration so they can only be used to observe daytime phase advances (Prosser, 2000). It was found that cyclic-AMP (cAMP) and cAMP agonist administration cause phase advances of the clock that emulate those caused by 5-HT (Prosser, 2000). Likewise, the peak sensitivity of cAMP is during the mid subjective day just like 5-HT (Lovenberg et al., 1993). These similarities in activities point to a relationship between 5-HT

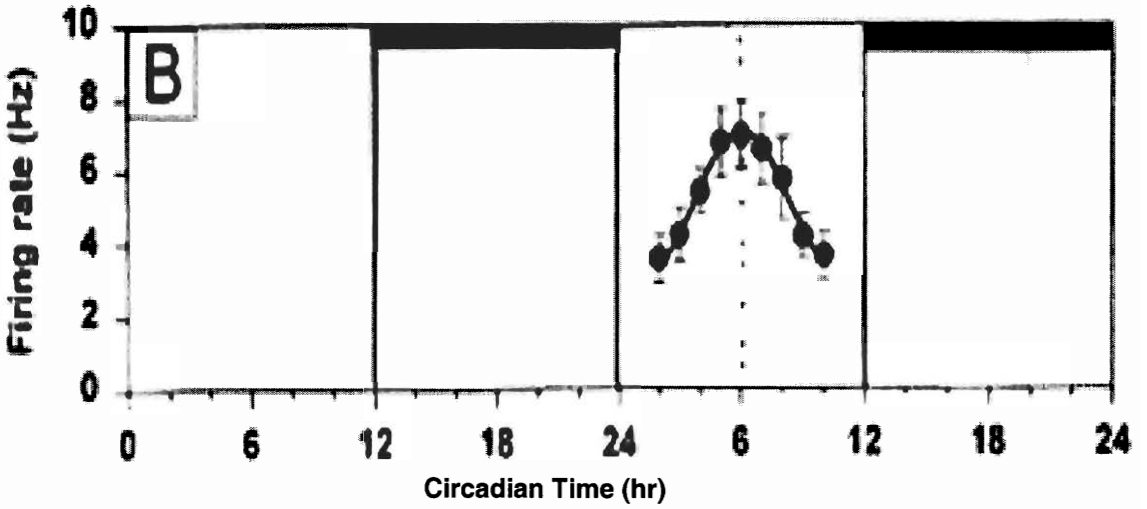

Figure 2: Firing Rates of Neurons in the SCN (From Prosser, 2000)

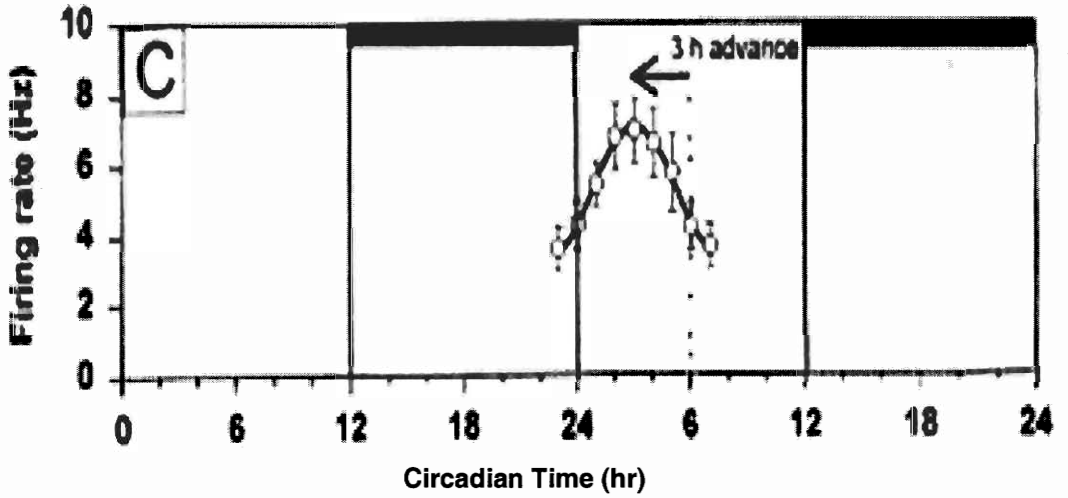

Figure 3: Firing Rates of Neurons in the SCN Following 5-HT Administration During Mid Subjective Day (From Prosser, 2000)

induced phase advances and increases in the levels of cAMP. If the activation of protein kinase-A (PK-A), inhibition of photodiesterases, and the opening of K^+ and Ca^{2+} dependent K^+ channels are blocked, the effects of 5-HT agonists are lost (Lovenberg et al., 1993; Prosser, 2000). This information was used to form a signal transduction model to describe the cellular effects of 5-HT. Serotonin agonists activate adenylate cyclase, which catalyzes the production of cAMP. Cyclic-AMP can then activate PK-A, which phosphorylates proteins. Protein kinase-A has also been linked to initiation of the *c-fos* immediate early genes that causes the transcription of other genes. This may not be involved with the phase advances but the levels of *c-fos* mRNA increases following SCN exposure to 5-HT (Prosser, 2000).

It is not clear yet whether 5-HT acts directly on pacemaker cells in the SCN, or indirectly through interneurons that synapse onto pacemaker cells. By allowing 5-HT to bind to its receptor but inhibiting synaptic interactions that would occur between interneurons and pacemaker cells, by supplying TTX which blocks action potentials, and Mg^{2+} which blocks neurotransmitter release, the location of the serotonin receptors can be ascertained. These experiments did not block 5-HT induced phase advances so the receptors are probably on the clock cells themselves. However, these treatments do not inhibit interactions between gap junctions so the possibility remains that 5-HT exerts its effects through gap junctions either between glial cells pacemaker cells, or between pacemaker cells (Prosser, 2000).

There are several 5-HT receptors in the mammalian brain. In the SCN, large concentrations of 5-HT_{1A}, 5-HT_{1B}, 5-HT_{5A}, and 5-HT_7 are found as well as some 5-HT_{1C} and 5-HT_2 (Prosser, 2000). The 5-HT_7 receptors are located throughout the thalamus and hypothalamus with a high concentration in the SCN (Gannon, 2001; Lovenberg et al., 1993). About 20-40% of the 5-HT receptors are 5-HT_7 while the remaining are mostly 5-HT_{1A} (Gannon, 2001). At first it

was thought that the 5-HT_{1A} receptor controlled the 5-HT induced phase advances in the clock because 5-HT agonist activity was blocked following treatment of the SCN with NAN-190, an antagonist specific for the 5-HT_{1A} receptor. Increasing evidence however indicates that the 5-HT_7 receptor may in fact be responsible for the characteristic phase advances. Both receptors are pharmacologically similar in that they have high affinities for the same agonists and antagonists. However, 5-HT_7 is positively coupled to adenylate cyclase, which catalyzes the production of cAMP, while 5-HT_{1A} is negatively coupled to adenylate cyclase, which leads to a decrease in the levels of cAMP. In addition, the antagonist pindolol is specific for the 5-HT_{1A} receptor and cannot block the phase advances following 5-HT agonist exposure, while the antagonist ritanserin specific for 5-HT_7 does block the shifts. Thus, the biochemistry of the 5-HT induced phase advances mimics those caused following activation of the 5-HT_7 receptor rather than activation of the 5-HT_{1A} receptor (Prosser, 2000).

The 5-HT_7 receptors are located near cells immunoreactive for c-Fos, GABA, vasopressin and VIP (Gannon, 2001). Raphe nuclei input synapses on the same neurons onto which Neuropeptide Y, and retinal input synapse. There is an interaction between the various afferent connections to the SCN so that they influence each other's actions. For example, NPY inhibits the production of cAMP, and so hampers serotonergic phase advances. Serotonin however, does not act to discourage NPY's actions. Melatonin also inhibits 5-HT induced phase advances through the inhibition of cAMP, and enforces a phase advance in the pacemaker similar to that following exposure to NPY (Prosser, 2000).

There is an interaction between the retina and raphe input to the SCN to transmit photic information. This interaction is a modulatory one such that raphe stimulation attenuates the phase shifts caused by photic stimulation through the release of 5-HT, while 5-HT antagonists

can enhance this same input (Refinetti, 2000). Both 5-HT_{1B} and 5-HT_7 aid in the inhibition of photically induced phase advances at night. The 5-HT_{1B} receptors on retinal terminals block glutamate release, while 5-HT_7 receptors antagonize glutamate's postsynaptic effects (Prosser, 2003b). Serotonin can block the postsynaptic effects of glutamate by inhibiting the rise in Ca^{2+} levels that usually follows glutamate administration (Gannon, 2001).These effects may occur because the serotonergic receptors in the SCN synapse on the same cells that receive input from the retina. The connection between the two afferent inputs is apparent in hamsters. A photically induced phase shift in the activity rhythm of the hamster is lessened when the animal is active during the period of light. This activity may increase the concentration of serotonin present, among other places, in the SCN (Redfern & Lemmer, 1997). Glutamate can also interfere with serotonergic phase advances through the actions of AMPA-like receptors (Prosser, 2000).

The aforementioned effects that 5-HT has on the SCN have not been observed equally *in vivo* and *in vitro*. "Direct clock phase resetting by 5-HT…has been seen more consistently *in vitro* than *in vivo*" and several possible reasons could explain why this is so (Prosser, 2003a). That all afferent connections are severed when the SCN is removed from the brain for *in vitro* experimentation, may cause phase shifts uncharacteristic of living animals. When examining the influences of 5-HT on the SCN clock *in vitro,* neurotransmitters such as NPY, melatonin, and glutamate which would inhibit serotonin's effects are removed, the result being that the administered 5-HT is free to exert its full effects. In addition, when the SCN tissue is maintained *in vitro* the tissue may spread out slightly, creating more extracellular space. This might allow entraining chemicals to interact with the SCN neurons more easily and perhaps exert larger effects on the pacemaker than they could *in vivo*. The sensitivity of the 5-HT receptors may also be enhanced following separation of the SCN from the brain because there is a decrease in the

available 5-HT *in vitro*. Thus, the SCN may respond more robustly to 5-HT following a period of detachment from the raphe nuclei because the 5-HT receptors have become more sensitive to their ligands presence. If the 5-HT toxin *p*-chlorophenylalanine (PCPA) is injected into the SCN *in vivo* given to the pacemaker cells *in vivo*, the cells exhibit a larger phase advance when exposed to the 5-HT agonist DPAT than in control conditions (Prosser, 2003b). Correspondingly, if *in vivo* SCN cells can be sensitized to the presence of 5-HT following a depletion in 5-HT using PCPA, supplying *in vitro* SCN cells with a constant supply of 5-HT following slice preparation should desensitize the cells and cause no phase shift following a burst of 5-HT administration. This was indeed found in previous literature and "these results are consistent with the hypothesis that 5-HT receptor sensitivity (or downstream processes) normally increases *in vitro* due to the severing of 5-HT afferents during slice preparation" (Prosser, 2003a). These experiments indicate that 5-HT receptor sensitivity is mediating the different effects 5-HT has on the periodicity of the SCN *in vitro* and *in vivo.*

Because of this information I used immnuocytochemistry to investigate changes in the sensitivity of serotonin receptors in mouse brain slices. I hypothesized that the density of these receptors is correlated with the presence or absence of serotonin. When serotonin is plentiful the number of receptors is lower because there is so much serotonin to bind easily. However, when serotonin levels are low, the density of receptors should increase because serotonin is scarce. In mouse brain slices, the SCN has effectively been cut off from endogenous serotonin release. To test whether the density of serotonin receptors in the SCN (particularly 5-HT_7) changes in response to different levels of serotonin stimulation, I planned to perform immunocytochemical analysis of serotonin receptors in the SCN from brain slices exposed to different amounts of serotonin. Such investigation should help reveal whether serotonin causes a more robust

response *in vitro* because its receptors' sensitivity has been heightened due to deprivation from the endogenous serotonin input it received *in vivo*.

Chapter 2

Immunocytochemistry

Brain slice preparation: Coronal brain slices (500 μm) containing the SCN were prepared during the daytime from adult, male C57BL/J6 mice housed in a 12:12 light-dark cycle as reported previously (Prosser, 2000). Slices were maintained at the interface of a Hatton-style brain slice chamber, where they were perfused continuously with warm (37°C), oxygenated (95% O2 / 5% CO2), glucose/bicarbonate-supplemented Earle's Balanced Salt Solution (pH=7.4) (Sigma, St. Louis, MO). Slices were maintained in vitro for approximately 30 hours. Slices were then transferred to cold (4°C) 2% paraformaldehyde for 2-3 hours. Slices were then transferred to cold phosphate buffered solutions until sectioning.

Vibrotome sectioning was done to make 40-50 μm slices of the mouse SCN. The sections were rinsed with 0.1M Phosphate Buffer (PB) (pH=7.4) three times for ten minutes each time. Next, the slices were quenched in 0.3% H_2O_2 / 0.1M PB for 30 minutes at 4°C. After quenching, sections were put through serial washing with TritonX-100 (Sigma, St. Louis, MO) / 0.1M PB (pH = 7.4). Subsequently, the slices were blocked by 2% normal goat serum (Sigma, St. Louis, MO) (pH = 7.4-7.5). Then the sections were incubated with 5-HT_7R antibody (1:5000) (ImmnuoStar, Hudson, WI) (raised from rabbit) for 24 hours. The next day, after rinsing, the sections were incubated with anti-rabbit IgG conjugated with peroxidase (1:600) (Sigma, St. Louis, MO) at room temperature for one hour. For visualization, sections were reacted with 0.025% DAB, 0.01% $CoCl_2$, and 0.0003% H_2O_2 for 5-7 minutes. After several washings with dH_2O, the "stained sections were floated on to a gel-coated slide and mounted with coverslips with Permount (Fisher Scientific, Houston, TX)" (Prosser et al., 2003). For data analysis an Optronics Camera manufactured by Generic was used to take pictures under an

Olympus BX40 Microscope. And then, image files were captured by the PictureFrame version 2.1 program. Had strong positive staining consistently resulted, optical density measurements would have been conducted to determine the density of the 5-HT_7 receptor in the SCN. To accomplish this, the density of color in the SCN would be compared to the density of color in nearby areas of the hypothalamus that experienced nonspecific staining, and the ratio of the two densities would provide the relative optical density. Slices exposed to different amounts of 5-HT could all be analyzed in this way. For the full Immunocytochemical protocol refer to Appendix A.

Chapter 3

Results

5-HT_7 receptors are mainly expressed in the hippocampus, thalamus, hypothalamus, and suprachiasmatic nucleus. For the purpose of this research, I focused on the changes in the 5-HT_7 receptor (5-HT_7R) in the SCN. To observe changes in the 5-HT_7R in the SCN caused by variation in availability of serotonin, I did immunocytochemistry on mouse brain slices using 5-HT_7R Ab (ImmunoStar, Hudson, WI) from rabbit as the primary Ab and anti-rabbit goat IgG conjugated with peroxidase (Sigma, St. Louis, MO) as the secondary Ab.

Positive staining in the SCN for 5-HT_7R in the SCN was found using a 5-HT_7R Ab concentration of 1:5000 and a secondary Ab concentration of 1:600. This can be seen in Figure 4, which seems to show a clear contrast in staining between the SCN and surrounding tissue. The SCN section in this image was bathed in 0.05M Tris-HCl buffer during the DAB reaction that occurs during the visualization step. These results are ambiguous however because using the same concentrations of antibodies as before, weak staining was observed as shown in Figure 5. The difference in these two experiments is the buffer used during the visualization step. The tissue in Figure 5 was exposed to 0.1M Phosphate Buffered Saline instead of 0.05M Tris-HCl buffer during the visualization step. When the concentration of 5-HT_7R was varied from 1:5000 to 1:1000, and concentration of secondary Ab held constant at 1:600, slightly weaker staining of the SCN was found than in Figure 5. These new concentrations of antibodies produced staining as seen in Figure 6. Again the buffer used during the visualization step was 0.1M Phosphate Buffered Saline. While clear distinctions in staining strength were not seen following varied concentration of primary Ab administration, they were observed when different

buffers were used. Specifically, coronal sections buffered with 0.05M Tris-HCl buffer during the visualization step provided much clearer staining of the 5-HT_7R in the SCN.

Again however, these results are not absolute because nonspecific staining of the tissue was also found when the slices were exposed to a primary Ab concentration of 1:5000 and a secondary Ab concentration of 1:600, using 0.1M Phosphate Buffered Saline during visualization. Thus, under the same Ab concentration and buffering conditions, both weak staining in the SCN, and nonspecific staining throughout the tissue was found.

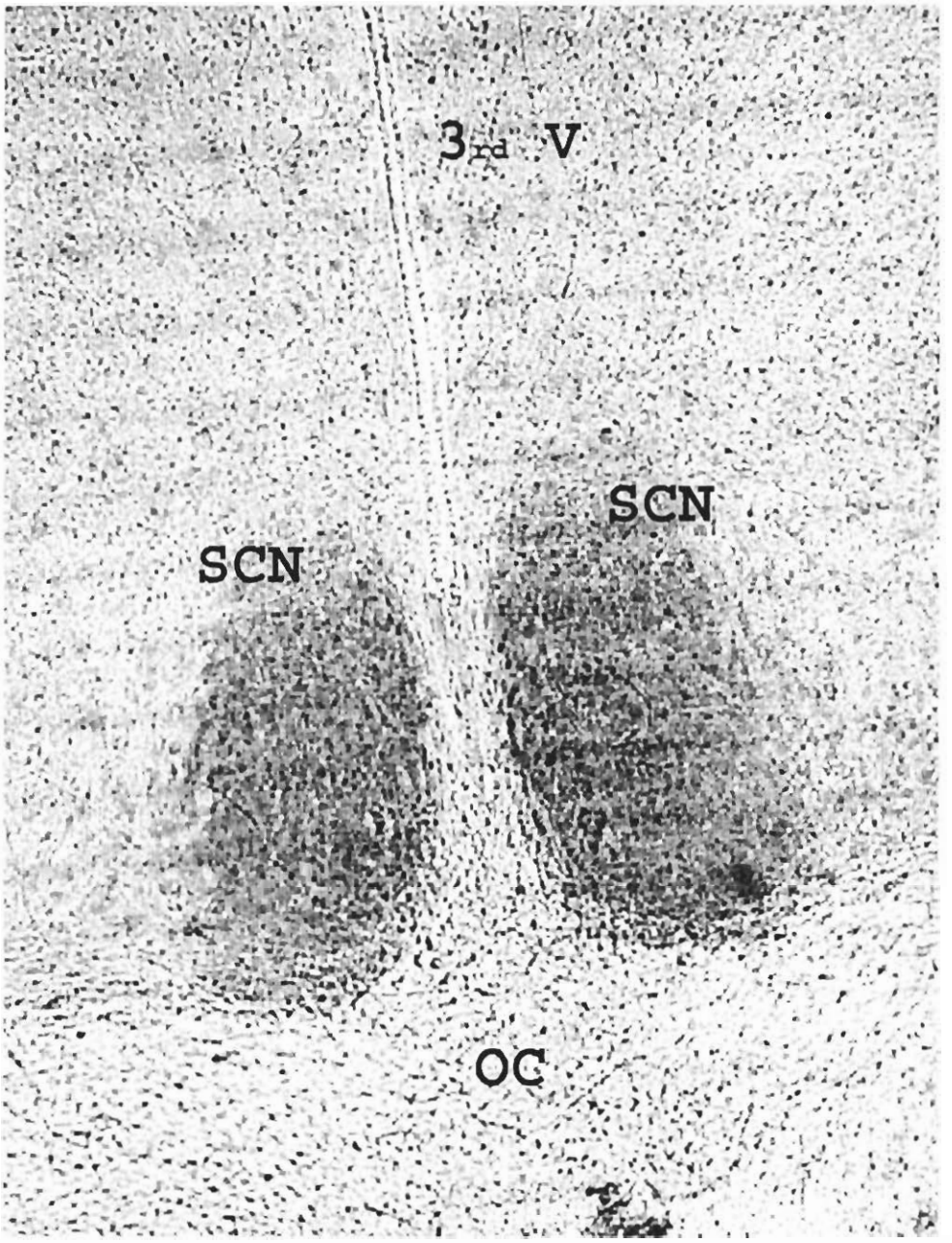

Figure 4: Positive Staining of 5-HT$_7$R in the SCN.

This is an image of a 50μm mouse coronal section of the SCN. To observe the 5-HT$_7$R in the SCN, I used anti-5-HT$_7$R Ab (1:5000) from rabbit and anti-rabbit goat 2° Ab (1:600). During the DAB reaction required for visualization, 0.05M Tris-HCl buffer was used. Abbreviations are: 3rd V-Third Ventricle, SCN-Suprachiasmatic Nucleus and OC-Optic Chiasm.

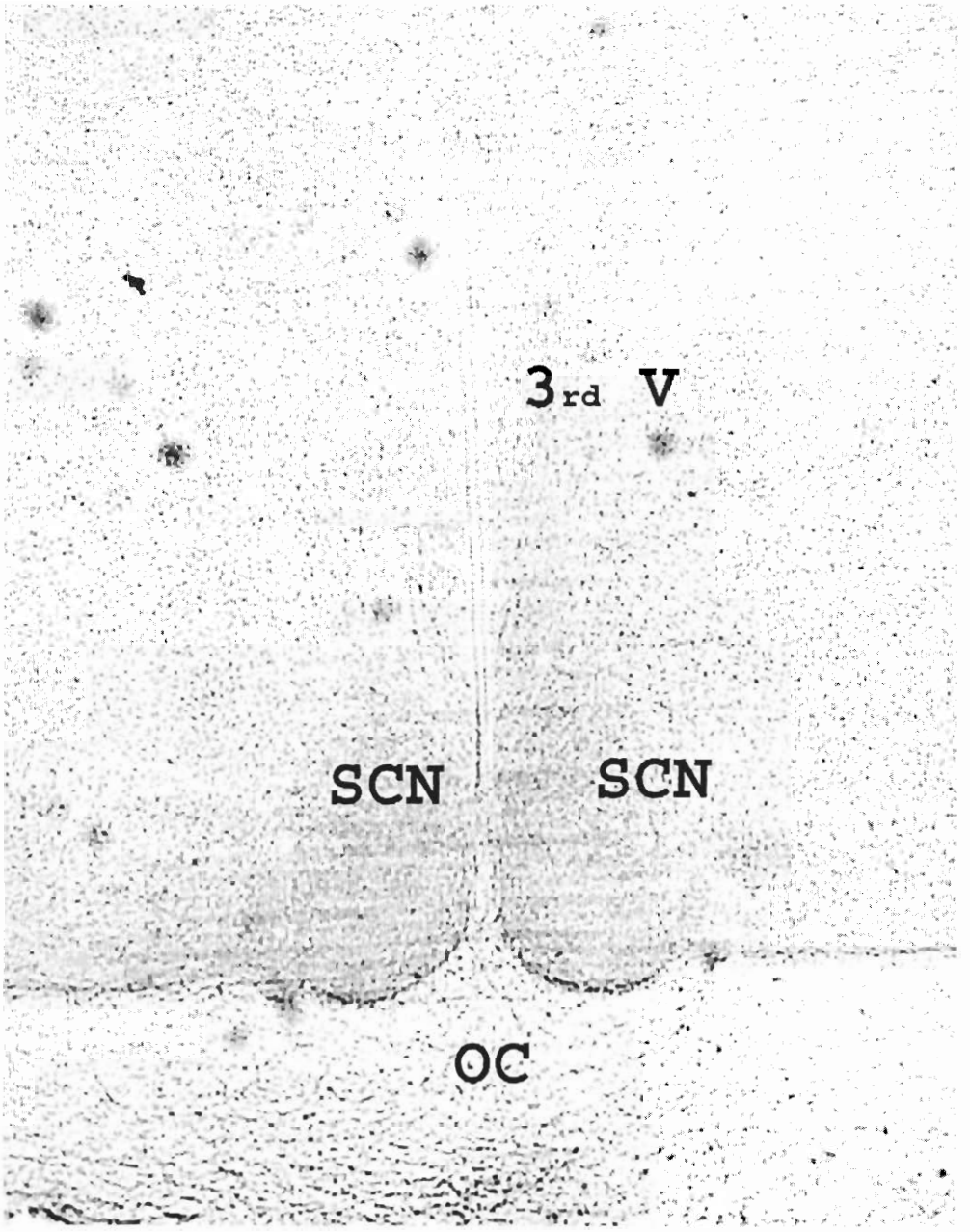

Figure 5: Weak Staining of 5-HT$_7$R in SCN.

This is an image of a 50μm mouse coronal section of the SCN. To observe the 5-HT$_7$R in the SCN, I used anti-5-HT$_7$R Ab (1:5000) from rabbit and anti-rabbit goat 2° Ab (1:600). During the DAB reaction required for visualization, 0.1M Phosphate Buffered Saline was used. Abbreviations are: 3rd V-Third Ventricle, SCN-Suprachiasmatic Nucleus and OC-Optic Chiasm.

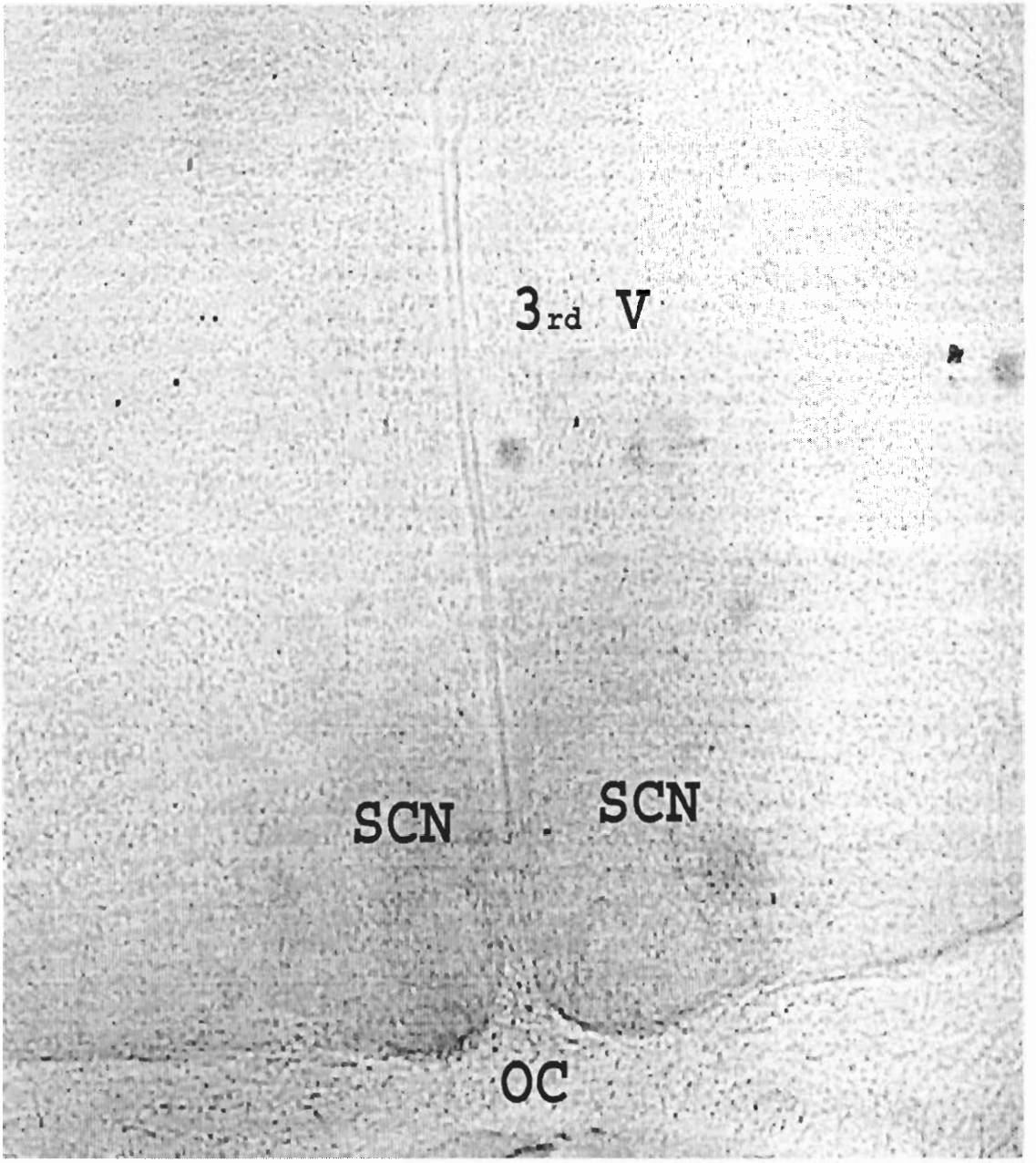

Figure 6: Weak Staining of 5-HT$_7$R in SCN.

This is an image of a 50μm mouse coronal section of the SCN. To observe the 5-HT$_7$R in the SCN, I used anti-5-HT$_7$R Ab (1:1000) from rabbit and anti-rabbit goat 2° Ab (1:600). During the DAB reaction required for visualization, 0.1M Phosphate Buffered Saline was used. Abbreviations are: 3rd V-Third Ventricle, SCN-Suprachiasmatic Nucleus and OC-Optic Chiasm.

Chapter 4

Discussion

In immunocytochemistry there are four main factors to consider. They are antibody (Ab) ratio, pH, H_2O_2 concentration, and section condition. The correct balance of each factor must be attained for optimal results. Strong positive staining was not found in my experiments and there are several reasons that this could be so, all dealing with the aforementioned issues. To begin with, the Ab ratio of both primary and secondary antibodies must be considered. The affinity of the Ab for the tissue antigen is important and inversely correlated with incubation time required for equilibrium (the point when the available binding sites on the antibody have become saturated). For this reason it might be beneficial to pick a primary Ab with a high affinity for its antigen so that more intense staining can be obtained in a shorter amount of time. Also, antibody-antigen interactions are reversible so a high affinity Ab must be utilized because during immunocytochemistry repeated washings and rinses can loosen a weak complex. Dynamics that could change the strength of this antibody-antigen complex are high temperature, low pH, and high salt concentrations. However, incubating the specimens with a higher concentration of the primary Ab for a shorter duration could enhance nonspecific background staining. "Gentle agitation helps to reduce background staining" (Boenisch, 2004a).

The maintenance of proper pH of all solutions and materials used in the immunocytochemistry protocol is also necessary for proper positive staining to occur. This is because antibodies and buffers work optimally at pH of 7.4-7.8. Allowing the sections to be bathed in acidic or basic environments can skew results because the effectiveness of all agents is lowered.

In addition, during the immunocytochemistry I performed on the mouse coronal sections of the SCN, I found that the buffer used during the visualization step had an effect on the clarity of staining obtained in the SCN. Using 0.05M Tris-HCl buffer in the visualization step appeared to give more positive staining than the 0.1M Phosphate Buffered Saline did. Boenisch stated that "of the diluents tested, Phosphate Buffered Saline, although widely used as a diluent for primary antibodies, was found to suppress the reactivity of most…antibodies tested" (Boenish, 2004c). This finding agrees with the weak results I observed using Phosphate Buffered Saline, however does not explain why 0.05M Tris-HCl buffer utilization during visualization led to stronger positive staining.

Another factor that must be controlled for is the concentration of H_2O_2 used during the visualization step because an excess of H_2O_2 can increase the dark background staining that would inhibit unambiguous analysis of the findings.

During sectioning the SCN slices can become crushed or ripped which has a detrimental effect on the quality of positive staining that can result from the immunocytochemistry. Care must be taken to keep sections in top condition so that antigens in question remain in the area of the slice in which they would naturally be. Poor sections can result in excessive nonspecific background staining.

Other factors that exacerbate potential background staining include diffusion of antigens from its original site throughout the surrounding tissue, ingestion of antigens by phagocytes in tissue outside the target area, and cross-reactivity. Diffusion of antigens could occur if they are also in the blood plasma and had already perfused the tissue prior to the experiment. Phagocytes outside the area of interest could also have ingested the antigen, in this case 5-HT_7R, and so could be capable of interacting with the primary Ab. Cross-reactivity could also occur in which

the Ab when the target protein is similar to proteins outside of the target cells. If this similarity is strong enough the primary Ab could bind to several antigens to produce nonspecific staining (Boenish, 2004b). Many factors must be taken into consideration when attempting to perform a successful experiment using immunocytochemistry. Less than desirable balancing of any combination of these factors could have caused the relative absence or irregularity of positive staining seen in my experiment. Careful balancing of these aspects of the immunocytochemistry protocol is necessary to obtain clear and unambiguous staining in future research.

Had expected results been obtained, specifically strong positive staining in the SCN following exposure to a single burst of 5-HT_7 Ab, further experimentation would have been desired. These cells could represent the optical density of cells not exposed to continuous supply of 5-HT preceding a phase-shifting dose of 5-HT (10 μM), or similar immunocytochemistry could be performed using 5-HT instead of 5-HT_7 Ab. A control set of SCN tissue slices would not be exposed to any 5-HT following excision from the animal, which should result in no staining. These slices would be used as a baseline to compare all other optical density ratios obtained. As reported previously (Prosser, 2003a), slices continuously bathed in a non-phase shifting dose of 5-HT (0.05 μM), and then administered a phase-sifting dose of 5-HT (10 μM), exhibited no phase shift. SCN tissue under these same conditions should likewise show no positive staining in the SCN for 5-HT_7R. A fourth trail would keep these conditions the same, however, the non-phase shifting dose of 5-HT would be kept at 0.01 μM, and the resultant staining should be intermediate between that seen in samples treated with no continuous supply of 5-HT preceding a phase-shifting dose of 5-HT (10 μM), and that seen in slices exposed to a constant non-phase shifting dose of 5-HT (0.05 μM) and then a phase-shifting dose of 5-HT (10 μM). Further research would hopefully incorporate these ideas.

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Appendix A

IHC (ver. 3.1) for 5-HT7R

Consideration> section, removing bubbles in egg yoke block, incubation time of 1° Ab, all Ab ratio, Ab condition, pH

Fixing tissue (for 5-HT7)
Put slices (on filter paper) in 2% paraformaldehyde/0.1% glutaraldehyde for 2hr and transfer slices to 0.1M PB for overnight (in cold room)

1. Fix egg yoke block at platform of vibratome
2. Pour PB up to soaking block in bath

- - - -

19. Add H2O2 (final concentration 0.0003%~0.0006%) - can be adjusted) to DAB solution and react until desired staining
20. Rinse 3x10min in dH2O (rinse them as fast as you can)

- - - -

FORM C
COLLEGE SCHOLARS PROJECT APPROVAL

Patrick Higdon — Scholar

Dr. Duke — Mentor

Race, Symbolic Violence, and The Continuum of Violence in Brazil — Project Title

COMMITTEE MEMBERS
(Minimum 3 Required)

Name	Signature
DAWN DUKE	Dawn Duke
Janice Harper	
Hector Qirko	

PLEASE ATTACH A COPY OF THE SENIOR PROJECT TO THIS SHEET AND RETURN BOTH TO THE PROGRAM DIRECTOR. THIS PAGE SHOULD BE DATED AND COMPLETED ON THE DATE THAT YOUR DEFENSE IS HELD.

DATE COMPLETED 5/4/05

Race, Symbolic Violence, and the Continuum of Violence in Brazil

Patrick Higdon
College Scholars Project
April 28, 2005

Introduction

The conceptualization of race in Brazil is so complex that even Brazilians have difficulty explaining it. The myriad of terms used to classify the admittedly mixed-race phenotype of a Brazilian are complicated by delicate notions of race and class that subjugate blackness and celebrate whiteness. Racism, therefore, plays a prominent role in Brazilian society. Any academic attempt to elucidate racism, however, is complicated by a firmly held belief that racism does not exist in Brazil. The myth that Brazil is a "racial democracy" claims that the history of widespread, compassionate miscegenation has produced a mixed-race Brazilian nationality that uniquely combines its African, Indigenous, and European lineage. This myth is the foundation of the contemporary denial that racism exists in Brazil. This project attempts to link the history of violence towards Afro-Brazilians with its contemporary expressions in order to reconceptualize racism as a form of violence in contemporary Brazil. In order to achieve this reconceptualization, the project employs an anthropological concept called the continuum of violence (Scheper-Hughes and Bourgois 2004).

The first section of the project goes into explicit detail on the construction of the continuum of violence. The violence of racism in Brazil, from its historical roots to its contemporary manifestation, will be analyzed within the rubric of four major types of violence: direct political violence, structural violence, symbolic violence, and everyday violence (2004). An understanding of these four types of violence is necessary to understand how the continuum of violence affects the lives of Afro-Brazilians today.

The second section is a direct historical look at colonization and the institution of slavery in Brazil. It will be made clear that the genesis of racism in Brazil is colonialism, and that the

expression of colonial domination was the institution of slavery. Colonialism and slavery will then be put into the continuum of violence.

The third section takes a look at racism after the 1888 abolition of slavery in Brazil. It discusses the social theories that were created in order to maintain the power relations that characterized pre-abolition Brazil. The work of Gilberto Freyre and the construction of the racial democracy led to the denial of the existence of racism. The ideology of whitening and its concrete political endorsement preserved racist assumptions of the inferiority of the Afro-Brazilian. The section also details how these theories were utilized, often hypocritically, by the Brazilian military government to exploit the Afro-Brazilian presence. Finally, the continuum of violence will be used to link the violence of pre-abolition Brazil with the violence of post-abolition Brazil. Also, it will highlight the links between the racial democracy, the whitening ideology, and the military government's attempt to expropriate aspects of Afro-Brazilian identity.

The fourth section attempts to clarify a few important debates that characterize scholarship of race in Brazil. The first debate revolves around the importance of the conceptualization of race in Brazil. The second discusses the delicate relationship between race and class in Brazil. A discussion of these debates is important to define this project's position on the effects of racism in contemporary Brazil.

The final section of this project discusses the contemporary manifestations of racism as a form of violence in Brazil. Evidence will be provided through the review of ethnographic accounts. This research not only documents popular racist discourse, but also discusses different forms of violence that structure the racism that affects the lives of Afro-Brazilians. Also, evidence of racism in contemporary Brazil based on studies of the criminal justice system and

the workplace will highlight the institutionalization of racism in Brazil, and will provide statistical evidence as support. The phenomenon researched in this final section will be analyzed using the continuum of violence.

Broad-based, critical analysis of the existing scholarly literature on race and racism in Brazil is the dominant methodology of this project. I have relied on ethnographic research and institutional analyses to provide firsthand evidence of racism in contemporary Brazil. The continuum of violence is the construction of Scheper-Hughes and Bourgois (2004) and in no way is this project claiming credit for any part of the concept; it is simply using it to analyze the racism that exists in Brazil. The reader will notice the predominance of symbolic violence in this discussion of racism in Brazil. Racism is a major form of symbolic violence, resting on a symbolic order that consigns the Afro-Brazilian to an inferior social position. After the direct political violence of the institution of slavery, much of the racism documented relies on this dominant symbolic order. A through discussion of symbolic violence is provided in this project's first section.

The purpose of the project is to develop a new way to conceptualize racism in Brazil that can be utilized to promote increased mobilization along racial lines. It is my intention that the ideas presented here can be utilized by the Brazilian black movement or any group attempting to invert the traditional view that racism does not exist in Brazil. I firmly believe that racism is violence. I will clearly articulate this belief by critiquing the relative silence of racism in the political discourse of Brazil and by reconceptualizing racism as violence acting in contemporary Brazil.

The Continuum of Violence

Violence is a slippery concept – nonlinear, productive, destructive, and reproductive. It is mimetic, like imitative magic or homeopathy. "Like produces like," that much we know. Violence gives birth to itself. So we can rightly speak of chains, spirals, and mirrors of violence – or, as we prefer – a continuum of violence.
-Nancy Scheper-Hughes and Philippe Bourgois (2004, 1)

Introduction

This project was inspired by the work of Nancy Sheper-Hughes and Philippe Bourgois in the anthology *Violence in War and Peace.* The anthology provides an astonishing collection of articles written by moral and political philosophers, sociologists, political scientists, psychiatrists, journalists, and most importantly anthropologists. "All the selections are infused with an ethnographic, anthropological sensibility in which scientific observation is combined with moral and political witnessing" (2004). Almost every article in the anthology is rich with violence survivor interviews, and in many articles anthropologists and researches straddle the thin line between participant observer and actual participant, making the anthology a unique collection of lived experience and ethnographic insight. The anthology is an attempt at a greater understanding of the causes and forms of violence. The authors attempt to achieve this understanding through a theoretical construction called "The Continuum of Violence." Before discussing the construction of the continuum of violence it is important to understand just how the authors define the concept of violence (2004).

Violence is certainly not an easily definable concept. It is safe to say that murder, rape, and genocide are generally considered forms of violence. If violence were defined using a hierarchy, based solely on physicality, these expressions of violence would likely be the most

evil, despicable acts that one could commit, representing the most dramatic expressions of violence. But violence is not a hierarchical concept. It produces emotion, hate, liberation; it destroys cities, countries, lives, families; and it reproduces marginalization, poverty, and inequality. Violence is also much more than just the physical. In fact, as Scheper-Hughes and Bourgois claim, "focusing exclusively on the physical aspects of torture/terror/violence misses the point and runs the risk of degenerating into a theatre or pornography of violence" (2004). This "pornography of violence" causes one to look past what can often be major structural or symbolic forces that produce the violence in the first place, and permit it to continue. It is of the utmost importance to understand that violence is not just the physical but "also includes assaults on the personhood, dignity, sense of worth or value of the victim" (2004). Violence can take many forms, and can have many effects on the physical and the mental self, the individual and the group, the citizen and the society. This project utilizes the continuum of violence in order to better understand how different forms of violence are interconnected, how they reproduce new forms of violence and reinforce existing forms of violence. It follows Bourgois' (2001) methodology in his chapter, "The Continuum of Violence in War and Peace: Post-Cold War Lessons from El Salvador." Bourgois distinguishes between four types of violence in order to discuss the continuum of violence: Direct Political Violence, Structural Violence, Symbolic Violence, and Everyday Violence.

In the introduction to *Violence in War and Peace,* the authors discuss the importance of the Holocaust in the field of violence studies. The Holocaust was, among many things, an incredibly well documented and thoroughly researched case of genocide and genocidal violence. The authors position the Holocaust as one of the poles of the continuum of violence, the most severe and the only atrocity with enough recognition as to command distinction on the

continuum. This is not to claim that all forms of violence represented on the continuum lead to the Holocaust. It is merely a phenomenon in the continuum whose "scale of human death and destruction" remains unmatched. The authors do not define so readily the other pole of the continuum. It is in this exploratory voyage to the other pole that they are able to discuss the many intertwined definitions of violence that have led to the creation of the continuum of violence.

What is the other pole of the continuum? Is it a simple street mugging? Is it verbal abuse from an overzealous father at an elementary school sporting event? The point here is that the authors do not define the other pole of the continuum of violence. They are not in a position to decide what constitutes a less significant form of violence. Even the most insignificant of actions can have the most violent of implications. Even the most accepted social behavior can have symbolic repercussions. What is more important is to define the nature of the continuum, and to discuss the mechanics that operate to move the lived experience of violence back and forth along the continuum.

Direct Political Violence

In today's world the idea of political violence engenders thoughts of a repressive political regime, violating the rights of the citizens it controls. The United States invasion of Iraq has been painted by the U.S. media as an attempt to free the Iraqi citizens from the repression of the government of Saddam Hussein. This is seen by many as a legitimate form of violence because, as the Bush administration has argued, it was necessary in order to secure peace both in Iraq and in the United States. By legitimating the violence of warfare in this way, advocates of the conflict have drawn on nationalist symbols of security, sacrifice and unity, suggesting that to

claim that the invasion is an illegitimate form of violence is to insult the courage of the U.S. soldiers engaged in combat. Despite the social divisions the war has fostered in the United States and with many in the U.S. and abroad challenging the legitimacy of this war, the soldiers remain and the violence continues. By drawing on Bourgois' conceptualization of the continuum of violence, it can be argued that the direct political violence of Saddam Hussein's regime has now turned into the direct political violence of a seemingly endless war.

This distinction between legitimate and illegitimate forms of violence is important to the understanding of the continuum of violence. "What constitutes violence is always mediated by an expressed or implicit dichotomy between legitimate/illegitimate" (2004). Legitimate violence is violence that is seen as necessary based on individual or group political, economic, or social position. Legitimate violence has an end goal, and it is viewed as necessary to advance the interests of an individual or a group. Illegitimate violence is viewed as "illicit" violence contrary to the ideology of an individual or a group. Within the context of direct political violence, the dominant political force largely determines the distinction between legitimate and illegitimate violence. Through the control of influential media outlets and public discourse, the institution that perpetrates the political violence is able to legitimize its motives, actions, and ideology, and is able to stigmatize that of the opposition. Bourgois defines direct political violence as "targeted physical violence and terror administered by official authorities and those opposing it" (2001). This definition distinguishes both the violence of official authorities and the violence of opposition as illegitimate forms of violence.

Victoria Sanford (2004) discusses the repression of Mayan peasants in Guatemala. Both official authorities and the opposition to the official authorities perpetrated the political violence against the Mayan population of Guatemala. This violence, classified by Sanford as genocide

and the United Nations as "attempted genocide" (Issacs, 2003), claimed the lives of over 200,000 people, the majority Mayan peasants. Through its direct control of the media, the Guatemalan government was able to legitimize the genocide through a discourse of subverting communist, guerilla organization. They were so successful that they enlisted United States military support. The fact that many Mayan peasants fled the repression, depending on and at times joining the guerilla fighters (who the Guatemalan government claimed were the target of the military violence), was enough to convince the Guatemalan government and the United States of the legitimacy of the violence against the Mayan peasants. The construction of this legitimacy is what permitted the violence to reach such a horrific point. The United Nations' 1999 declaration of "attempted genocide" is proof that what was once perceived as a legitimate form of violence by both the U.S. and Guatemala is now viewed as illegitimate at the international level. The Guatemalan case is an explicit example of what Jeffrey Sluka would call "the state as terrorist" (2000), committing acts of direct political violence against its citizens. The Mayan population of Guatemala was the victim of political violence perpetrated by the guerilla groups as well, though on a much smaller scale. It must not be forgotten that political violence can also occur within the context of those resisting state terror or the official authorities, and Sanford is quick to point out that Mayan peasants were often exploited, abused, and at times murdered by the guerillas that were resisting the Guatemalan government. Using hindsight and the useful concept of direct political violence, one can clearly see that direct political violence against the Mayan peasants of Guatemala by both official actors and opposition was and remains wholly illegitimate and tragic (Sanford, 2004).

Structural Violence

Analyses of violence need to be, as one would expect, structural. When discussing the origins or the development of a particular form or expression of violence, one must understand the structure in place that aids and permits the violence to exist. Bourgois defines structural violence as "chronic, historically entrenched political-economic oppression and social inequality" (Bourgois 2001, 426). The structure that produces violence can be concrete, such as the military in the context of a repressive, dominant political regime that relies on violence to maintain power. It can also be a less visible structure, such as the persistence of the highly unequal distribution of wealth that plagues many countries in the world today. Such unequal distribution often confines the lower class to poor medical facilities thus causing greater rates of sickness and death. The unequal distribution of wealth, and the economic system that maintains it, have violent implications for the physical well being of those that are marginalized by this structural violence. Structural violence is an extremely important component of the continuum of violence. As Paul Farmer phrases it, "The task at hand…is to identify the forces conspiring to promote suffering"(1997, 288). These forces, whether visible or invisible, utilize the historical persistence of inequality and the marginalization of individuals and groups in order to legitimate violence and suffering (Bourgois 2001).

Farmer's work in Haiti provides a valuable analysis of the structural violence that perpetuates Haitian poverty. He discusses the lives and deaths of poor, rural Haitians and how they are scarred by structural violence. As Farmer discusses, abject poverty is a term that aptly describes the life of many Haitians. A legacy of colonial domination and imposed authoritarian governments devoted to the maintenance of "order" rather than human rights served to exacerbate the dire economic situation. Farmer noted that the phenomenon of landlessness

plagued his field site. He was able to ascertain that this phenomenon is the direct result of a 1956 U.S. led dam-building project that displaced much of the rural population. The project, intended to increase widespread access to water and electricity, instead expropriated valuable land without providing the essential services that it promised. As he notes, "suffering is certainly a recurrent and expected condition…where everyday life has felt like war" (Farmer, 1997).

During his field research, the military control of the government made working for the military an attractive job for men, and at the same time the steady income of soldiers made them attractive partners for women. In one account, Farmer discusses the life of a woman named Acéphie from Haiti's Central Plateau. Acéphie, living within the context of the colonial legacy and a repressive military regime, displaced by the damn project, and as a result, suffering abject poverty, pursued a romantic relationship with a military general who, unbeknownst to her, suffered from the AIDS virus. Though the relationship was short, Acéphie contracted the virus and died a few years later. This is a story of structural violence. Visible forms of violence such as colonialism, repressive military rule, and an ineffective dam project, combined with less visible forms of violence and suffering such as the AIDS epidemic and an incredibly poor quality of life, violently structured the life and death of this woman. As is the case with structural violence, Acéphie's death illustrates a pattern affecting the lives of many young women in Haiti. It is a heartbreaking end result of the combination of forces that produced and continues to produce structural violence in Haiti (Farmer 1997).

Symbolic Violence

When analyzing violence through the lens of the continuum it becomes clear that all representations of violence have symbolic roots and implications. As stated before, even mundane, seemingly ordinary acts can have violent repercussions. Likewise, what seems a gross example of interpersonal violence can have damaging symbolic effects at the level of the individual or the collective. Symbolic violence is a term coined by Pierre Bordieu. In his *Pascalian Meditations* Bordieu states:

> Symbolic violence is the coercion which is set up only through the consent that the dominated cannot fail to give to the dominator (and therefore to the domination) when their understanding of the situation and relation can only use instruments of knowledge that they have in common with the dominator, which, being merely the incorporated form of the structure of the relation of domination, make this relation appear as natural; or, in other words, when the schemes they implement in order to perceive and evaluate themselves or to perceive and evaluate the dominators (high/low, male/female, white/black, etc) are the product of the incorporation of the (thus naturalized) classifications of which their social being is the product (Bordieu 1997, 170).

Symbolic violence is dependent on the idea of the "symbolic order." Both the victim and the perpetrator of violence, defined by Bordieu as the "dominated" and the "dominator," play a role in the perpetuation of symbolic violence. The denial of agency of the "dominated" is legitimated through the maintenance of the symbolic order, or, what is recognized and "misrecognized" by all actors as encompassing legitimate social relations. Symbolic violence is "the internalized humiliations and legitimations of inequality and hierarchy" (Bourgois 2001, 426). Acceptance of the symbolic order allows symbolic violence to pervade the lives of the "dominated" and express itself through these internalized humiliations and legitimations. For example, in the United States there is widespread belief that each person has equal access to the "American Dream." The idea follows that the U.S. is a "meritocracy" where anyone who works hard

enough can be successful, regardless of ethnicity, history, circumstance or chance. This is part of the U.S. symbolic order. In his discussion of Puerto Ricans living in the U.S. inner city (in this case East Harlem), Bourgois terms the violence produced by the U.S. symbolic order "U.S. Inner-City Apartheid." He discusses how the inability of Puerto Ricans in East Harlem to penetrate the meritocracy ideal is a consequence of "extreme segregation, social inequality, and material misery" that "allows symbolic violence to prevail: blaming the poor – and getting the poor to blame themselves" (Bourgois 2001, 427).

Everyday Violence

Violence exists in the world in many forms, but the most easily agreed upon form of violence is interpersonal violence. It is impossible to deny the existence of interpersonal violence; it fills airtime on local news stations all over the United States. Murders, muggings, rape, armed robbery, all occur every day in almost every part of the world. The question is when does this violence become a routine, normal part of life? There is no answer to the question, but the search for one certainly is intriguing. The official concept of "everyday violence" utilized in the violence continuum was coined by Nancy Scheper-Hughes (1992) in her ethnography *Death without Weeping: The Violence of Everyday life in Brazil.* It is perhaps best defined as "the individual lived experience that normalizes petty brutalities and terror at the community level and creates a common sense or ethos of violence" (Bourgois 2001, 426). Everyday violence exists when the interpersonal violence that occurs becomes so routinized, so normalized, that it becomes a part of life, a part of the existence of those within the confines of a certain social space. It occurs so often that it shocks few. This is not to say that the violence does not produce fear. In fact, Scheper-Hughes and Bourgois often cite Michael Taussig's concepts of "terror as

usual" and "culture of terror" in order to describe the experience of living with the fear of everyday violence. But the point here is that the mere existence of everyday violence implies struggle. Life, interned by everyday violence, is a struggle: to survive, to gain respect, to succeed, or even to love. The everyday violence seen and described on the news as a petty, isolated incident, can be every bit as destructive as a calculated terrorist act.

Death without Weeping: The Violence of Everyday Life in Brazil is, among other things, an incredibly detailed depiction of the everyday violence faced by the people of a slum, or *favela,* in rural, northeast Brazil. The ethnography details many different forms of everyday violence that exist and are normalized in the *favela.* One example involves the disappearance of young, Afro-Brazilian men that lived in the *favela.* A drought in 1987 caused crime rates to rise. The rise in crime was blamed on the poor as a whole, but it was primarily blamed on the Afro-Brazilian men of the *favela.* As a result groups of unidentified men in uniform began "disappearing" young, black men from the *favela* at a dramatically increased rate. Overall public sentiment concerning the disappearances is that they were necessary, that the disappearance and subsequent death of these men was essential to maintain order. "The disappearance of young black men continues…in other poor bairros of Bom Jesus and is treated as a nonissue, not even thought worthy of a column in the mimeographed opposition newspaper of Bom Jesus" (Scheper-Hughes 1992). The routinization of the disappearance of young, dark-skinned, poor Brazilians is a form of everyday violence that exists in the *favelas* of Brazil.

One of the main concerns of *Death without Weeping* is the universality of mother love. Scheper-Hughes challenges the notion that mother love is a universal by describing life in the *favela.* She documented the death of infants at increasingly high numbers, but she also noticed that there was often indifference to the death of what were called "angel babies." She

documented public sector indifference in the hospitals, state municipalities, even the mayor's office; she also documented private sector indifference from the upper and middle class and within the context of the *favela* family structure including the mother figure. She was able to determine that because of public and private apathy towards the harsh living conditions and the plight of the people living in the *favela*, newborn children not perceived to have a "will to live" were often resigned to death. These children were the victims of an everyday violence that normalized parental neglect and general indifference, and thus contributed to the high infant morality rates in the *favela*. It could be said that the mothers of "angel babies" were the victims of symbolic violence. These mothers, because of their desperate situation, internalized their discontent, for the persistence of abject poverty provided little or no options to revolt against the "symbolic order" of things. Because of the general inability to provide basic needs for the survival of the children due to the neglect shown towards the situation in the *favela*, the internalized symbolic violence resurfaced as the everyday violence of indifference and neglect, leading to the "hastened death of 'angel babies.'" Scheper-Hughes determined that this form of everyday violence was so pervasive in the *favela* that it provided a solid critique of the universality of mother love (Scheper-Hughes 1992).

Conclusion

The last example provides a look into the interplay of symbolic violence and everyday violence. It also referred, though not nominally, to the structural violence of life in the *favela*. The reason the continuum of violence is so valuable is that it permits the analysis of these seemingly disparate forms of violence (suffering, neglect, indifference, struggle). By understanding and utilizing the concepts of direct political violence, structural violence,

symbolic violence, and everyday violence, the researcher can achieve a greater understanding of the root of a particular expression of violence, thus contributing to a more valuable critique of the violence itself. As Scheper-Hughes and Bourgois make clear the most important goal is the "witnessing, critiquing, and writing against violence, injustice, and suffering" (2004). This project attempts to "write against" the violence of racism in contemporary Brazil. By utilizing the continuum of violence the reader will begin to understand the historical development of racism in Brazil and how it contributes to the violence of racism in Brazil today.

Colonization and Slavery

The strategy of studying colonial legacies is not, in my opinion, another way of justifying mere analogies, but a tool for understanding the genesis of current situations of social injustice
-Gustavo Verdesio (2002, 2)

Introduction

The root of racism in Brazil can be traced to pre-contact Brazil, prior to the arrival of Portuguese explorers. "On the eve of the discovery of America, savagery, paganism, servitude, and blackness became identified in the European mind as marks of racial inferiority" (McAlister, 1984). European contact with the continent of Africa and the people that inhabited it is the root of the racism in Brazil today. Many characteristics initially produced this racism, the most prominent being very different skin color from that of the Europeans, perceived lack of religion (translated as non-Christian), complete lack of European concepts of "civility," and perceived lack of law or order (McAlister 1984). The quote from Gustavo Verdesio at the beginning of this section encourages researchers to study colonization as a tool to understand injustice in the world today. Utilizing the continuum of violence, the reader will understand the violent "genesis" of racism in Brazil and be able to connect this genesis with the contemporary Brazilian expressions of racism.

The reader should not forget that the indigenous population of Brazil was nearly wiped out by the colonial process, and it also suffers, to this day, from the legacy of colonial domination and slavery. For the sake of this project, regretfully, the indigenous experience will be omitted because of constraints of time and space (for an in depth discussion of the colonial process and the indigenous people of Brazil see Gomes 2000, Anderson 1999, McAlister 1984).

Discovery and the Initial Stages of Colonization

European explorers reached Brazil in the early 1500's, and Brazil was discovered by a Portuguese fleet commanded by the explorer Pedro Alvares Cabral. For many years the Portuguese crown for the most part neglected Brazil as a source of exploitation, focusing mostly on commerce in India. In the early days of colonization the major Brazilian export was brazilwood, which was used in Europe to make a fashionable dye. The other migrants to Brazil at this time were missionaries and *degredados* (criminals) (McAlister 1984).

The rumors of precious minerals in the interior of Brazil sparked renewed interest in the Americas on the part of the Portuguese crown. As more colonizers were sent to Brazil small towns began to arise. The crown granted landholdings to certain privileged migrants and immediately a system of commerce began. The economic system in Brazil in the early 1500's depended on brazilwood, but as the price of sugar began to rise, "Circumstances dictated that the mainstay of Brazilian colonization would be sugar" (McAlister 1984).

The explosion of the sugar economy in Brazil dramatically increased labor demand. Colonizers initially sought indigenous labor, but the rapid decline of the indigenous population, attributed to European disease, violence, and vast interior migration, forced the Portuguese colonizers to look elsewhere to fill their labor need. "In 1559, the crown authorized the opening of the slave trade between Africa and Brazil" (McAlister 1984).

Slavery in Brazil

The system of the enslavement of Africans throughout the Americas is similar. There are differences such as language, the influence of religion, economic systems, among others, and

these differences can lead to dramatically different expressions of culture and society across time. The African slaves were at the very bottom of any class structure, were thought of as inferior, were physically dominated, malnourished, and were forced to perform the manual labor that was necessary in order to increase the wealth of the slave owners. Often little attention was paid to the life or death of the slaves, and because of the large and productive international slave trade they were easily replaced. These are generalities that certainly cannot account for the experience of every individual in every time period; however, they provide an outline, for those who do not already know of the institution of slavery in the Americas, of the treatment of African slaves. This project rejects the argument that slavery was more humane in Brazil, as proposed, for example, by Gilberto Freyre (1933) in an attempt to glorify the Portuguese contribution to Brazilian nationality. Slavery is an economic system founded on violence and inhumanity, and any attempt to generate a pseudo-humanitarian dialogue of slavery serves actually as an attempt to legitimate the violence of the institution itself.

Research on the intimate lives of African slaves in Brazil written from the perspective of the African slave is limited. The virtual non-existence of slave narratives from Brazil, like that of Frederick Douglass, Harriet Jacobs, Olaudah Equiano, and Sojourner Truth in North America, problematizes the study of the African and Afro-Brazilian experience of slavery in Brazil. The outline of slavery in the Americas provided earlier is important, but in order to achieve a greater understanding of slavery in Brazil one must understand specifically the Brazilian experience with slavery. Due to the relative lack of first-hand accounts, it is best to analyze the available data on the lives and deaths of slaves in Brazil in order to understand the violence of the institution.

Conrad (1986) discusses the longevity of the slave trade to Brazil, a trade that lasted officially from 1559 until 1888. He points to the inability of the Brazilian slave population to

maintain its numbers and, as he phrases it, "renew itself." His discussion of this inability provides a solid look at the violence that slavery inflicted upon the lives of the slaves:

> Two related factors motivated the African slave trade to Brazil and continued to do so for three hundred years: economic opportunity combined with a wasteful system of human management that did not permit natural development of the slave population within Brazil (1986).

The economic incentive for slave owners was immense with the already documented rising world sugar prices, mining opportunities in the interior of Brazil, and the immense availability of zero cost labor. This violent and exploitative from of supply and demand economics produced a great amount of the wealth in Brazil in the three hundred plus years that slavery existed legally. Conrad also aptly describes the "wasteful system of human management":

> The effects of disease, punishment, excessive work, desertion, rebellion, manumission, a low ratio of females to males, and small regard for the lives of unproductive children caused a perennial population deficit which, almost from the beginning of Brazilian history, was compensated for by the importation of new Africans (1986).

The economic incentives and abundant labor supply provided the rationale for the utter disdain shown towards the lives of the African slaves throughout the entirety of slavery. Conrad's chapter is a genuine attempt to highlight the violence incurred by the slaves in Brazil without the benefit of first-hand accounts. He makes use of statistics and articles from the era of slavery to document the extreme volatility of the lives of slaves in Brazil. He understands the persistence of extremely high death rates and extremely low rates of life expectancy of the Brazilian slave population as consequences of the violence of the institution of slavery.

Colonization and Slavery within the continuum of violence

The continuum of violence model permits reinterpretation of the colonial process and the institution of slavery in Brazil. Even before the discovery of Brazil, the continent of Africa was the victim of the symbolic violence of the Portuguese explorer. Due to European cultural valuations that placed specific importance on European "civility," Christianity (especially Roman Catholicism), and white skin, the Portuguese automatically assumed the racial inferiority of the African people. This assumption set in place a symbolic order that devalued African/black and praised European/white.

With the creation of the symbolic order and the spread of European explorers to the Americas, the Portuguese took another exploitative step and joined the international slave trade, thus initiating one of the largest examples of direct political violence in Brazilian history. The direct political violence of the slave trade was legitimated through the symbolic violence against the African slave. The most important tool for legitimizing slavery, for the Portuguese colonizers, was the religion of the African slaves. Because they did not practice Christianity, it was believed that they did not have religion, and thus were in need of salvation. The wealth produced by the slave trade combined with the maintenance of a violent symbolic order to legitimate direct political violence. Once legitimated, the political violence of the slave trade became the institution of slavery in Brazil, the most important component of the Brazilian economy throughout the more than three hundred years of slavery. This institution served to violently structure Brazilian society, and, perhaps because of its longevity, became the dominant form of what the continuum of violence terms "structural violence" in Brazil (2004).

Bourgois defines structural violence as "chronic, historically entrenched political-economic oppression." There is no better term to define slavery in Brazil. Officially slavery

lasted over three hundred years. The work of Conrad details the "wasteful system of human management" that neglected the humanity of the African slaves. The alleged inferiority of the African people (symbolic violence) provided additional sustenance to nourish the structural violence of slavery. This structural violence defined the economic, social, and political life of Brazil; it directly influenced the racism of the post-abolition period in Brazil's history; and it is at the heart of contemporary expressions of racism in Brazil today. The colonial process and era of slavery in Brazil, in the continuum of violence, represents the interplay of political, symbolic, and structural violence, and this violence is the root of the racism that exists in Brazil today.

Racism in Post-Abolition Brazil

Introduction

In the nineteenth century, as slavery was gradually being abolished across the Latin American region, much public debate centered on the role of the newly freed citizens. Reinforcing the unequal power structures that prevailed in times of slavery, elites and politicians assumed the responsibility of solving this societal question. To these elites, maintaining productive economies was more important than successful incorporation of the freed slaves into society. Kim D. Butler discusses the elite motivation regarding the incorporation of freed slaves: "the privileged classes of the Americas perceived abolition as a structural shift that could be prevented from jeopardizing race-based social relations of power" (Butler 1998, 2). This section will go into detail on the maintenance in post-abolition of these "social relations of power" that were solidified within the context of colonization and slavery. It will discuss first Gilberto Freyre and the myth of racial democracy in Brazil. Freyre's work affected enormously the conceptualization of race and nation in Brazil, and its impact still challenges critics of racism in Brazil today. Secondly, the ideology of "whitening" will be defined and discussed in detail. From its origins in the Portuguese colonization of Africa to its use as an explicit political strategy in Brazil, whitening influences Brazilian social relations to this day. Thirdly, this section traces a more recent explanation of racial politics before the period of democratization that began after the military dictatorship stepped down in 1985. This serves not only to demonstrate the perpetuation of racism and the myth of racial democracy in Brazil, but also sets up the analysis of the contemporary conceptualization of race in Brazil. Finally, all these elements of post-abolition Brazil will be placed within the continuum of violence in order to support this project's reinterpretation of racism in contemporary Brazil. The continuum will provide the reader the

ability to link the symbolic violence of racism in post-abolition Brazil with the future discussion of racism in contemporary Brazil.

Gilberto Freyre and the Myth of the Racial Democracy

> *Every Brazilian, even the light-skinned fair-haired one, carries about with him on his soul, when not on soul and body alike—for there are many in Brazil with the mongrel mark of the genipap—the shadow, or at least the birthmark, of the aborigine or the Negro.*
>
> *-Gilberto Freyre (1933, 255)*

> *We are two fraternizing halves that are mutually enriched with diverse values and experiences; and when we round ourselves out into a whole, it will not be with the sacrifice of one element to the other.*
>
> *-Gilberto Freyre (1933, 318)*

After opening his book with a section on the colonization of Brazil, Gilberto Freyre continues *Casa Grande e Senzala (The Masters and the Slaves)* with thorough discussions of the role of the indigenous Brazilian, the Portuguese, and finally the African on Brazilian history, national development, and contemporary society. Published in 1933, Freyre's work, when taken in its historical context, reads as a genuine attempt to understand the colonial processes that conditioned race relations in Brazil. Thomas Skidmore, in one of his many contributions to Afro-Brazilian scholarship, provides a valuable discussion of Freyre's motivation:

> A third argument is that African slavery in Brazil was more benign than elsewhere in the Western Hemisphere, especially North America. Furthermore, the Portuguese, because of their previous close contact with the Moors, were less race conscious. From this argument it naturally follows, in Freyre's view, that modern Brazilian race relations are more harmonious (thus producing a 'racial democracy') than elsewhere, especially the United States (Skidmore 2002, 10-11).

Skidmore's analysis details the development of Freyre's notion of Brazil as a racial democracy. Most scholarship of Brazilian racial relations begins with this one fundamental, theoretical concept, a concept that shaped, and to this day continues to shape, conceptualization of race in Brazil. This concept, the Brazilian racial democracy, claims that Brazil is a country free of racial prejudice, where all coexist in harmony, and it has had a tremendous impact on scholarship (both Brazilian and international), Brazilian public policy, the Brazilian educational system, and as stated above, the popular conceptualization of race and racism, to name only a few. For example, Jocelio Teles dos Santos discusses three periods of Afro-Brazilian policy:

> The first, immediately after abolition, was dominated by the elite goal of establishing a nation that excluded ex-slaves and indigenous peoples...The second stage began in the 1920s and 1930s with the production of a discourse that assigned positive values to the Brazilian population...A third period...included an important change as significant public policies were directed at Afro Brazilian culture. Amid reiterations of the myth of racial democracy, denials of the existence of racial prejudice in Brazil, and the reelaboration of the concept of Brazil as a mixed-race nation, state agencies struggled to define what constituted folklore and market it as a tourist attraction (dos Santos 1998, 118-119).

In dos Santos' discussion, the second and third major stages in the development of Afro-Brazilian policy are marked by the perpetuation of the myth of racial democracy. The second stage characterizes the birth of the myth of the racial democracy. This stage was marked by a search for identity, or for a Brazilian "nationalism" that unified all of the different races and peoples in the country through the "assigned positive values." The third stage characterizes Afro-Brazilian culture as folklore, contributing only to the mixed-race nature of Brazil's racial democracy. Thus, Afro-Brazilian cultural expression is exploited and marketed as a form of historical tourism, something of the past to be remembered and celebrated for its contribution to the idea of the singular Brazilian nationalism, the triumph of the racial democracy. The myth of

the racial democracy exists because it denies the existence of racism by glorifying the contributions of the African and indigenous Brazilian to what is considered a uniquely Brazilian nationality. Thus the work of dos Santos details the extent that the myth of racial democracy has penetrated Brazilian society.

The myth of the racial democracy was long celebrated as an important view into the window of Brazilian race relations. The myth became a theoretical framework for creating public policy, cross-cultural studies of race, popular conceptualization of race, and many other issues that directly affected not only the Afro-Brazilian population but also the entire Brazilian population. The myth has had damaging effects on the social, political, and economic mobility of Afro-Brazilians, and it is necessary to understand the myth and its influence in order to understand the contemporary racial politics of Brazil.

The Origins of Whitening

Whitening is a difficult concept to define. It consists of conscious or unconscious decisions to move outside of ethnic social networks. It requires the acceptance of assimilationist, and in the case of Brazil, nationalist discourse. It then involves the actual process of whitening the skin through miscegenation and racial admixture. At the level of the individual, whitening does not have to be the result of a conscious decision. Factors such as social mores, economic opportunity or mobility, or even personal preference all may contribute to the conscious or unconscious decision to whiten the family lineage. As Peter Wade discusses, whitening has "an ambiguous relationship to personal motives" (Wade 1993)

Following Twine's recommendation to study the work of Wade, Wright, and Skidmore in order to understand whitening in Latin America, one can begin to understand the specifics of the

rationalization for the use of whitening as a political philosophy. Whitening is rooted in the idea that there is a physical and cultural hierarchy characterized by people with white skin at the top and people with black skin at the bottom. All three authors discuss prevailing social theories that led to the acceptance of the philosophy of whitening. They discuss theories of cultural evolution, positivism, white supremacy, polygeny, and social Darwinism. Important to these theories is the classification of black Africans as individually inferior in all things but labor. Ugliness, stupidity, inability, and fated extinction are characterized by the authors as having been employed to defend prevailing social theories corrupting African presence and identity. In context, the widespread acceptance of these theories logically engenders the widespread acceptance of whitening. It was believed that to whiten the population meant to better the chance at an economically productive, intelligent, capitalist, modernized, progressive society (Skidmore 1974)(Wade 1993)(Wright 1990).

Whitening, as an explicit political ideology, has a rich history in Latin America. Wade writes about racial identity in Colombia and provides detail on the Colombian state experiment with whitening. Similarly, Winthrop Wright discusses the explicit state policy of whitening in Venezuela in the late nineteenth century:

> Venezuelan elites began to formalize their view on race…their folklore conveyed their long-standing dislike of blacks…they actually called for the whitening of the population, by attracting European immigrants to Venezuela, and by effecting the virtual disappearance of blacks over an extended period of time (Wright 1990).

Whitening relies on the perpetuation of a racist symbolic order, or symbolic violence. In Brazil, it has already been demonstrated that this symbolic violence originated even before the colonization of Brazil, thus it can be argued that the process of whitening symbolically began

even before the first African slave arrived; however, the post-emancipation period in Brazil provides perhaps the best example of whitening as an explicit political ideology. In Brazil, whitening was a major mechanism, or controlling process, that elites utilized in order to maintain existing power relations and to solve the problem of the incorporation of freed slaves.

In his analysis of elite racial thought in Brazil Thomas Skidmore details the Brazilian experience with whitening. Ideologically, Brazilian whitening was based on a loose but widespread adherence to the prevailing race-based social theories. These theories predicted the inevitability of the decline of the Afro-Brazilian population:

> Doubtless it would be an exaggeration to predict their [the Negroes'] imminent extinction. Nonetheless, it is probable that they are not growing at the same rate as the other elements in the Brazilian population. Their role in Brazil can only decline; they will never have decisive influence on the destiny of the country (Skidmore 1974, 68)

Utilizing similar nationalist discourse as Freyre in his construction of the racial democracy, scholars argued that the inevitability of the disappearance of the Afro-Brazilian population was due to compassionate miscegenation based on the racial tolerance of the Brazilian elite. In other words, scholars said that violence and racism did not characterize the system of slavery that produced such widespread miscegenation in Brazil. This project argues instead that the institution of slavery in Brazil is characterized by the interplay of structural and symbolic violence; however, in order to solve the problem of incorporation of freed slaves in post-abolition Brazil, elites and politicians promoted the explicit ideology of whitening. Skidmore goes on to discuss the rapid acceptance of whitening as an ideal for Brazilian nationality (Skidmore 1974).

In the early 20th century, whitening began to concretely impact the political sphere in Brazil. As a complement to the miscegenation process, politicians and scholars began to advocate for a stricter immigration policy that denied African immigration. Kim Butler discusses the motivation for a restricted immigration policy:

> Cultural whitening was a powerful approach because it had the potential to affect all of Brazil's citizens but, as noted by Nina Rodrigues, it was necessarily a long-term approach with no guarantees. A much more promising 'mechanical' approach was to whiten the population through immigration (Butler 1998).

Whitening as a political ideology became a political issue, and European immigration was seen as a valuable economic and cultural resource. Though not ever formally introduced into national law, the overwhelming pro-European immigration sentiment remained steadfast in Brazilian society. Skidmore provides an historical evaluation of the political debate on immigration restrictions. He cites a 1945 decree by the Brazilian government that explicitly states the need to promote European immigration, and "the necessity to preserve and develop, in the ethnic composition of the population, the more desirable characteristics of its European ancestry" (Skidmore 1974).

Exploitation, Expropriation, and Economics

The Brazilian military controlled the government of Brazil from 1964 to 1985. The military government was based on coercion and force; however, there is considerable racial mobilization documented in Brazil in this period. The U.S. "black soul" movement had a considerable impact on the Afro-Brazilian youth. Important Afro-centric carnival groups formed

such as the Filhos de Gandhi and the Bloco Afro Ilê Aiyê. Also, the very important political group the Movimento Negro Unificado (MNU) formed with a pro-black agenda (Barcelos 1999). The mobilization around the Afro-Brazilian presence and its cultural expressions brightened the spotlight placed on Afro-Brazilian culture, and the military government seized the opportunity to exploit it.

Dos Santos' article discusses state policy towards the Afro-Brazilian population prior to redemocratization, and provides useful evidence documenting the extension of racism in Brazil through the 1980's. He discusses Capoeira, an Afro-Brazilian martial art culturally derived from Angola and spread to Brazil by the slaves brought from Angola. Capoeira combines dance, aesthetic expression, and martial arts. During slavery, slaves practiced capoeira as a form of rebellion against structural violence. Informed by the myth of racial democracy and its focus on the positive values of the Brazilian mixed-race nation, the government began a campaign to classify capoeira as a folkloric representation of the history of Brazil in order to market it to the growing tourist industry in Brazil. They celebrated capoeira as an example of Afro-Brazilian influence on Brazilian nationality but not as an example of the Afro-Brazilian presence in Brazil. The difference between influence and presence is an important one. The Afro-Brazilian presence implies that society must be sensitive to the unique cultural expressions that define the existence of the Afro-Brazilian population. By understanding the importance of the term "presence," one can combat the traditional view of the singular, authentic Brazilian nationality that has influenced Brazilian social relations since the time of Gilberto Freyre. This view celebrates the African influence on nationality not the African presence in Brazil. The Brazilian government's campaign to expropriate capoeira explicitly attempted to "purge" its African elements. Dos Santos documents specifically the government's attempts to redefine capoeira in

Brazil outside of its African origins. What cannot be emphasized enough is that the government's intention was to market an aspect of the unique Brazilian nationality so revered by Gilberto Freyre; however, by attempting to purge the African elements of capoeira, they explicitly contradicted Freyre's respect for the contribution of the African to Brazilian nationality. This hypocritical stance is an explicit example of racism. The Brazilian government sought to confiscate capoeira and expropriate it for economic reasons, or as dos Santos phrases it, "the state sought both political control and what might be termed symbolic surplus value for economic development" (dos Santos 1998, 123).

The Continuum of Violence in Post-Abolition Brazil

Outside of the confines of the structural violence of slavery, the Brazilian elite embraced racist social theories that permitted its maintenance of economic, social, and political control. The crux of these theories was the alleged inferiority of people of African descent. In Brazil, this symbolic violence against the Afro-Brazilian was a more academic form of the same symbolic violence that legitimated the political and structural violence of the institution of slavery. This symbolic violence attacked Afro-Brazilians by claiming that they were the least attractive, the least intelligent, and the least productive members of society, and thus naturally doomed to disappear. This familiar symbolic order facilitated the production of a popular ideology of whitening. The accepted approach to whiten the Brazilian population was continued miscegenation, which was implicitly supported through the social denigration of the physical appearance of the Afro-Brazilian implied by the racist social theories, and explicitly encouraged by the Brazilian government and Brazilian scholars of race. The Brazilian government also opened the dialogue on a more concrete form of whitening, exemplified through its promotion of

pro-European immigration policies that not only marginalized African immigration to Brazil but attempted to discontinue it. Whitening as a political strategy in Brazil is an explicit example of racism; therefore it is a major expression of symbolic violence that survived discovery, colonization, slavery, and, it is now evident, abolition. The racist symbolic order that aided the advance of the ideology of whitening in Brazil once again confirmed the long-standing belief in the inferiority of the Afro-Brazilian population.

The myth of racial democracy developed by Gilberto Freyre also has violent implications in Brazilian society. In post-abolition Brazil, much of Brazilian society accepted and nurtured Freyre's notion of the uniqueness of the single Brazilian nationality, and its focus on harmonious and compassionate race relations. Freyre's allegations of the history of Brazilian race relations effectively rewrote Brazilian history to exclude the political, symbolic, and structural violence that characterized Brazil before the abolition of slavery. While it may not have been his intention, as discussed earlier in the paper, the widespread acceptance of the Brazilian racial democracy readjusted the symbolic order, thereby affecting public policy, academic discourse, and popular notions of race and racism. Directly removed from the violence of the institution of slavery and thus living with that excess burden on economic, political, and social mobility, the development of the idea of the racial democracy and its rejection of the existence of the violence of racism in Brazil increased these burdens on the mobility of the Afro-Brazilian. The racial democracy symbolically dominated racial discourse for a number of years, and its impact still legitimates much of the violence against Afro-Brazilians today.

As Paul Farmer understands structural violence, "the task at hand…is to identify the forces conspiring to promote suffering." The promotion of a whitening ideology and the acceptance of the racial democracy are major forces that conspire to promote suffering in Brazil,

symbolically directed at the Afro-Brazilian population. Prior to the redemocratization of Brazil in the early 1980's, these forces combined with the repression of a military government, the growth of the tourist industry, and ironically, an increase in racial mobilization of the Afro-Brazilian population to create structural violence. This structural violence defined the Brazilian military government's attempts to exploit capoeira. The Brazilian government utilized its political dominance and the symbolic violence permeating Brazilian society to exploit the increasing popularity of capoeira. The social marginalization of the Afro-Brazilian population legitimated the economic exploitation of an Afro-Brazilian cultural form. This is an example of the direct interaction between symbolic and structural violence. The symbolic violence that attacked the Afro-Brazilian population, born in social theories that legitimated the whitening ideology and the racial democracy, helped to create the structural violence that allowed for the economic exploitation of capoeira.

Conceptualization of Race and Class in Brazil

Before the examination of contemporary expressions of racial discrimination in Brazil can be addressed, it is necessary to clarify a few arguments. In order to challenge contemporary racism in Brazil, one must first outline what the term Afro-Brazilian means. In the United States the term would connote any Brazilian of African descent; but U.S. and Brazilian conceptualizations of race are very different. Popular conceptualization of race in Brazil does not employ a simplified white and black dichotomy. The classic anthropological study done by Harris (1964) documents the wealth of terms that Brazilians use to classify other Brazilians. He also notes that there were often disagreements between individuals on the classification of other individuals. Harris' conclusion is that "without a method for clearly distinguishing between one group and another, systematic discrimination cannot be practiced" (1964). Writing on race relations in Latin America, Harris is alluding to racial discrimination. It can be argued that the concepts of racial discrimination and racism require separate explanations; however, if discrimination is seen as the denial of access to a particular group, whether to a restaurant or to human rights, the core of this denial is racism. In the continuum of violence both concepts rely on the acceptance of the symbolic order that posits the inferiority of the Afro-Brazilian. Racial discrimination and the racism that sustains it are both dominant forms of symbolic violence in Brazil. The final section of this paper will highlight the racism that is entrenched within contemporary Brazilian society, therefore explicitly rejecting Harris' conclusion that racial discrimination (a form of symbolic violence) does not exist.

Contemporary research points toward the notion that physical characteristics carry considerable importance in the conceptualization of race in Brazil:

> Brazilians classify themselves by phenotype—through a system combining skin color, physical characteristics (shape of nose and

> lips, hair color and texture, and eye color, and regional origin—rather by ethnic origin or race. Thus, "color," not race, becomes the significant marker in racially identifying an individual (Piza and Rosemberg 1999, 37).

With color being the defining characteristic of the conceptualization of race in a society that is informed by the myth of racial democracy and its associated mixed-race pride, it makes sense that there exist a seemingly interminable number of terms used to identify race. This project defines Afro-Brazilian in a manner that is generally consistent with the view of the Brazilian black movement. The black movement attempts to appeal to all Brazilians of African descent, making an effort to "unify blacks and mulattos under a common banner" (Barcelos 1999, 157). This effort is similar to the U.S. conceptualization of race but also recognizes the differences in popular Brazilian understanding of race. The black movement attempts to achieve unification through the promotion of common, positive cultural traits of the Afro-Brazilian population (Barcelos 1999).

Another important argument that must be addressed when discussing the conceptualization of race in Brazil is the role of class. Harris, in discussing the mobility of the Afro-Brazilian, claims that with increased education and income a Brazilian of any color skin can be associated with whiteness, therefore "money whitens," as Harris says. In Portuguese the expression follows, "Preto rico no Brasil é branco, assim como branco pobre é preto" (Schwarcz 2001, 78). This observation adds another layer to the already complex issue of the conceptualization of race in Brazil. It also elucidates the important relationship between race and class in Brazil.

In simplified form, the debate between race and class in Brazil is an argument about whether the social position of the Afro-Brazilian, predominantly in the lowest socio-economic class, is due to race discrimination or to class discrimination. Harris certainly sides with the

school that promotes class as the most important factor. Dos Santos (1998) cites a member of the Brazilian federal government discussing the class-base of discrimination and going as far as to say that even slavery was strictly class based. The argument of the class-basis of discrimination can be used in a variety of ways. Harris uses it to conclude that there is no discrimination in Brazil outside of class discrimination, and his view is widely shared by many in Brazil. It is the direct descendent of the Brazilian racial democracy and it is used to deny the reality of racism. Dos Santos' citation involves a government worker attempting to glorify the Brazilian national identity. This argument is also rooted in the work of Gilberto Freyre. Due to theoretical ties to the Brazilian racial democracy and the work of Gilberto Freyre, these two arguments incorrectly assume that racism does not exist in Brazil, and they represent the perpetuation of symbolic violence in Brazil. In contemporary Brazilian politics, some argue that policies to eradicate poverty, not racism, will raise quality of life for the Afro-Brazilian population. This is another way to deemphasize the racial discrimination that exists in Brazil. This project takes the counter-argument and focuses primarily on the racism that exists in contemporary Brazil, while understanding that race and class are not independent variables. The *favela* is a major characteristic of urban poverty in Brazil, and therefore is a major characteristic of the life experience of the Afro-Brazilian population. Life in the *favela* is characterized by structural violence. A number of forces reproduce this structural violence. The persistence, nationwide, of an extremely high gini coefficient, a ratio that determines the inequality of income distribution (according to the World Bank Brazil had the fourth highest in the world as of 2002), means that the Brazilian poor live in abject poverty relative to the wealthy in Brazil. The maintenance of high crime rates threaten the safety of those living in the *favela*. These are just two of the forces that create structural violence in the *favela*. It is the combination of the

structural violence of favela life with the symbolic violence of racism that makes the continuum of violence such a powerful force in the lives of Afro-Brazilians today. Benedita da Silva, the first Afro-Brazilian congresswoman, provides a quote that symbolizes the relation between race and class in Brazil: "Blacks suffer because they are poor, but they are poor *because* they are black" (da Silva 1997).

Racism in Brazil: An Undeniable Reality

> *In a racial democracy, the individuals have to have common interests and equal opportunities, do they or do they not? How many Black ministers do you have? And Diplomats? Governors? Secretaries of State? Judges? And Generals? Cite the name of one. Just one. And Mayors? Bankers? Come on, Directors of banks. Or estates. Not even on TV? You've observed the commercials on television? I turn on the apparatus and the impression is that I'm in a Nordic country. How many Blacks go to the schools, the colleges? What is the percentage of Blacks in the Brazilian population?*
>
> -Paulo Colina in "My African Friend" (1995, 739-740)

Introduction

The majority of the literature on contemporary forms of racial discrimination in Brazil is rooted in the myth of racial democracy. It should not be difficult to see how this myth preserves its influential place in Brazilian society. The reader is encouraged, however, to recognize this myth for its contribution to the persistence of symbolic violence in Brazil. The myth has affectively removed race from popular consciousness, influencing the symbolic order that dominates all levels of Brazilian society. The first part of this final section relies upon ethnographic research to elucidate forms of racism in contemporary Brazil. The work of three anthropologists will be analyzed in detail, and each ethnographic account will be individually placed within the continuum of violence. All three anthropologists understand the importance of the myth of racial democracy in Brazil. Two of the ethnographic accounts are centered on race and specifically racism in Brazil. One important aspect to note of these first two ethnographic studies is that they study racism in the favela, and both anthropologists admit the reality that Afro-Brazilians contribute to the persistence of racism in Brazil. This fact will be addressed later. The other ethnographic account is *favela*-centered. Race is not the primary focus, but

because of the large concentration of Afro-Brazilians in the *favela*s, the issue of race is touched upon in a number of instances that prove very useful for this project.

The second part of this final section will analyze racism in the workplace and the criminal courts of Brazil. These analyses will be based more on statistical studies that attempt to delineate institutional expressions of inequality between Afro-Brazilians and Euro-Brazilians. The ethnographic research provides personal accounts of the racism that is experienced in everyday life in Brazil, but these studies provide aggregate figures that highlight discriminatory practices institutionalized in Brazilian society.

Ethnographic Evidence of Racism

The first ethnography that is going to be addressed, *Laughter Out of Place: Race, Class, Violence and Sexuality in a Rio Shantytown, was written* by Donna Goldstein. The ethnography is an attempt to understand the way that women in the *favela* cope with the power structures that dominate their lives. She develops a theory based on the creation of humor and the utilization of laughter in order to express social discontent. In her chapter, "Color-Blind Erotic Democracies," Goldstein addresses issues of aesthetic hierarchies, whitening, racial democracy, and exploitation, and she discusses how Afro-Brazilian women negotiate these issues on a daily basis (Goldstein, 2003).

Goldstein starts with a description of the ideal of whitening in Brazil and the role it plays in Brazilian society. In her discussion of contemporary evaluations of physical beauty she reiterates the same claim that this project traces as far back as the Portuguese colonization of Africa: "Blackness was—and still is—associated with slavery, dirty work, and ugliness" (107). Goldstein witnesses the whitening ideology in Brazil most notably through joking. She notes the

taunting of one dark-skinned child, that he was "only fit to clean up the mess of white people" (121). In another instance, Goldstein discusses a relationship between a young "upwardly mobile black man" and a woman that was considered too dark-skinned. The mother of the young man engaged in regular racist joking in order to discourage the relationship. Both of these instances reinforce the cultural belief that white skin is associated with upward mobility and black skin with backwardness. These seemingly innocent jokes implicitly reinforce the whitening ideology in Brazil (Goldstein, 2003).

Goldstein also discusses the struggle to recognize racism that Afro-Brazilian women face on a daily basis. Starting with the work of Gilberto Freyre, she discusses the construction of the erotic mulata figure. By deemphasizing the violence of slavery and imagining a history of a consensual master-slave relationship in Brazil, Gilberto Freyre created the image of the "sexualized mulata" with a "large sexual appetite" (119). This identity, she claims, seems to have been embraced by much of Brazilian society including Afro-Brazilian and mixed-race women. It creates a market for the consumption of the Afro-Brazilian or mulata figure, as well as an economic opportunity for the Afro-Brazilian female. Afro-Brazilian women pursue sexual relationships with white males as an economic relief mechanism, but they are also submitting to the white/dominant/male and black/servant/female power structure. Goldstein notices that many women she interviews use these sexual relationships to support the popular notion that racism does not exist in Brazil. The women therefore try to validate the existence of the racial democracy based on their relationships with white men, though these relationships are based on unequal power relations, socially constructed identities, and often sexual exploitation. Goldstein defines the interplay of race, class, and gender in Brazil as the idea of "color-blind erotic democracy" (Goldstein, 2003).

One very important aspect of racism in contemporary Brazil is that racist discourse comes from Afro-Brazilians as well as society at large. Goldstein documented racist joking, and often Afro-Brazilians made the jokes that implicitly reinforce the whitening ideology that survives to this day in Brazil. By focusing on the ugliness and the inferiority of the darker-skinned Brazilians, Afro-Brazilians actively participate in the construction of the symbolic violence that has dehumanized their presence for over 500 years. This is not to place blame on the Afro-Brazilian population. Whitening is the symbolic order; and racism from the Afro-Brazilian is merely "the consent that the dominated cannot fail to give to the dominator when their understanding of the situation and relation can only use instruments of knowledge that they have in common with the dominator" (Bourdieu 1997, 170).

The idea of color-blind erotic democracy, in the continuum of violence, is a combination of structural and symbolic violence. Attempts to deny the existence of racism in Brazil originate from the work of Gilberto Freyre and his construction of the racial democracy. The racial democracy not only readjusted the symbolic order to exclude racism, but it also rewrote history to prove the uniqueness of Brazilian nationality, including the pseudo sexually reciprocal relationship between master and slave within the context of slavery. Goldstein demonstrates the acceptance of this myth in contemporary Brazil, and notes that women adapt to the Freyrean readjusted symbolic order by searching for mechanisms to legitimate it. The widespread acceptance of the sexualized mulata figure contributes to the legitimacy of the symbolic violence that affects the lives of Afro-Brazilian women. Another contributing factor to this legitimacy is the structural violence of life in the favela. In Goldstein's ethnography, women respond to adverse economic conditions by "actively pursuing" these relationships in which they are symbolically dominated. Therefore, in response to the structural violence of poverty or the

favela, they become active participants, being symbolically dominated by white males, sexual obligation, and the construction of the of the sexualized mulata figure.

The second ethnography is *Racism in a Racial Democracy: The Maintenance of White Supremacy in Brazil,* by France Winddance Twine. Twine challenges the notion of a Brazilian racial democracy with direct ethnographic evidence, and she argues that the notion of white supremacy remains intact in contemporary Brazil. Twine's work focuses on knowledge and memory in a rural town in Rio de Janeiro state called *Vasalia*. She details extensively the efforts of Brazilians to defend the myth of racial democracy. One such effort has already been discussed in this project. It is the idea that discrimination in Brazil is strictly class-based. One interviewee states that people "believe that whoever has money is superior…Only money is important" (1998, 70). Twine also documents important "discourses of containment" that attempt to defend the popular belief that racism does not exist. These discourses of containment attempt to place racism in an alternate time or space, one that does not define the reality of the intimate lives of Brazilians. For example, many Brazilians claim that racism is a thing of the past, claiming that Brazil has progressed beyond such discriminatory practices. Many also claim that racism only happens elsewhere, or outside of a direct geographically bound space such as a city or the rural area. By adhering to these beliefs that deny the existence of race-based inequality, Brazilians contribute to the expansion of society's inability to recognize racist practices. This creates a popular discourse of symbolic violence that reinforces the historically oppressive symbolic order linked to Gilberto Freyre and the myth of racial democracy (1998).

Twine also details the existence of whitening in Brazil, and utilizes it as support for the maintenance of symbolic violence in Brazil. Strictly describing popular descriptions of physical beauty, she cites numerous quotations that reinforce the idea that white/blond is associated with

beauty and black is associated with ugliness. She attributes part of this social trend to the representation of Afro-Brazilians on Brazilian television: "The absence of black Brazilians on television in nonstereotypical roles is one mechanism by which Euro-Brazilians come to be defined as the aesthetic ideal" (1998, 89). Thus the choice of partner is influenced by the acceptance of the whitening ideal. Whitening in Brazil is a major form of symbolic violence that originated before colonization. The defense of the racial democracy and the perpetuation of the whitening ideal aid the perpetuation of a symbolic order, or as Twine states a "common sense," that continues to deny the recognition of the symbolic violence of racism in Brazil (1998).

Twine also demonstrates how white supremacy and racism penetrate the realm of memory in Brazil. By choosing not to celebrate the national holiday in recognition of the abolition of slavery, Vasalians steadily erase the memory of slavery from public consciousness. By teaching a whitened version of the history of slavery, young Brazilian children are not privy to the understanding of the subjugation of Afro-Brazilians throughout Brazilian history. By refusing to acknowledge the existence of relatives of salient African ancestry, many Brazilians attempt to whiten their family lineage. Twine's work demonstrates how Brazilians categorically deny the effect of violence on the situation of Afro-Brazilians today. Twine also demonstrates how many Brazilians actively attempt to purge the African presence from popular memory. These actions deny the history of race-based inequalities in Brazil and ignore its link to the contemporary violence of racism in Brazil today; thus, the ignorance of the history of the continuum of violence towards the Afro-Brazilian population supports the belief that racism no longer affects Brazil (1998).

Nancy Scheper-Hughes spent an enormous amount of time researching the violence of everyday life in Brazil. Her creation of the concept of everyday violence has been cited by this

project as an important element of the continuum of violence. As she notes, the combination of structural and symbolic violence that characterizes the creation and existence of the favelas has produced an everyday violence that problematizes safety and survival. Scheper-Hughes, though not specifically writing about the Afro-Brazilian experience with poverty, documents the existence of direct political violence "aimed at a specific segment and shade of the shantytown population (1992, 225). This political violence included the disappearance of young, Afro-Brazilian males due to the terror of police death squads. To these death squads, the high crime rates in the favela, a consequence of everyday violence, provided reason enough to legitimate the direct political violence: "Increasingly today race and racial hatred have emerged as subliminal subtexts in the popular discourses that justify violent and illegal police actions in shantytown populations" (1992, 225). In Scheper-Hughes work, political, symbolic, structural, and everyday violence characterize the lives of Afro-Brazilian slum dwellers. These four forms of violence represent the continuum of violence of the personal lives of the Afro-Brazilian population, and document the resilience of racism in Brazil today (1992).

Institutional Violence

In his article, "Racial Discrimination and Criminal Justice in São Paulo," Sérgio Adorno (1999) discusses the discrepancies that exist in the production of justice between whites and blacks in Brazil. This article is a good example of the delicate connection between race and class in Brazil. One of the main assumptions of his argument, also an important assumption to this project, is that the majority of Brazilians characterized by low socio-economic status are Afro-Brazilian. This is a fact because of the pervasiveness of racism in Brazilian history and its links to racism in contemporary Brazil. Due to the low socio-economic status of Afro-Brazilians as a

whole, Adorno argues that they receive marginalized access to proper representation in the Brazilian justice system. For example, 62% of Afro-Brazilian defendants are represented by either public defenders or court-appointed attorneys. Conversely, 60.5% of white defendants are represented by private attorneys. After detailing the significant advantages of private representation in Brazil, he presents two arguments to attempt to explain these inequitable statistics. The first argument is that private legal representation is expensive and the majority of Afro-Brazilians cannot afford this type of representation. Adorno's second argument is that the majority of lawyers in Brazil are white, and because of the restricted social access of Afro-Brazilians, "it is less likely that a black defendant will be personally acquainted with a lawyer, which reduces his options for selecting a defender" (1999, 134). Analyzed in the continuum of violence, Afro-Brazilians are victims of symbolic violence that devalues their presence and confines them to the structural violence of poverty and second-class citizenship in Brazil, thus making nearly impossible the ability for the majority of Afro-Brazilians to acquire equal legal representation within the Brazilian justice system. The institutionalization of discriminatory justice closely aligns with Bourgois' definition of structural violence; therefore, in the continuum of violence, the symbolic and structural violence that characterize Afro-Brazilian presence reproduce another form of structural violence that has been institutionalized in Brazil, and prevents Afro-Brazilian access to equitable justice (1999).

"Silent Conflict: Discriminatory Practices and Black Responses in the Workplace," by Maria Aparecida Silva Bento (1999), is a study that attempts to illustrate the racism that exists in the Brazilian workplace. By documenting the employment history of a cluster of Afro-Brazilian workers, Silva Bento exhibits an assortment of discriminatory practices that reinforce the racist symbolic order of Brazil. Such practices include the explicit denial of Afro-Brazilian candidates,

limited upward mobility of qualified Afro-Brazilians, mistrust of the competence of high ranking Afro-Brazilians, and divisive strategies that attempt to compromise the position of high-ranking Afro-Brazilians. All of these discriminatory practices were cited by the subjects of Silva Bento's study. The most striking arguments that she makes, however, are statistical:

> According to 1990 national census data, black women and men had the lowest incomes nationwide. Average income for white men was 6.3 minimum salaries, while for black men it was 2.9 minimum salaries (with the comparable figures for women being 3.6 for whites versus 1.7 for blacks). Conditions for black women reach shocking levels: in the Northeast region, the overall average monthly income of that group is 90 percent of the legal minimum wage, and in rural regions it is only 30 percent (1999, 110).

These statistics, combined with the discriminatory practices experienced by the study's subjects, demonstrate the racism that exists in the Brazilian labor market; therefore, it is characterized by symbolic violence towards the Afro-Brazilian. The dominant force, the Brazilian labor market, symbolically confines Afro-Brazilian workers to a symbolic order that defines them as inefficient, unintelligent, and undesirable, and therefore subject to lower wages on average than white workers (1999). Once again, the institutionalization of this symbolic violence contributes to the perpetuation of the structural violence that defines the Brazilian workplace.

Project Conclusions

This project is an in depth analysis of racism in Brazil. The common denial of the mere existence of racism in Brazil contributes to a quieting of race-based political dialogue. By tracing racism from its historical roots to its current manifestations, this project argues that racism persists as a dominant form of violence in contemporary Brazilian society. The continuum of violence permits the reconceputalization of racism in Brazil, and defines this racism as the interaction of political, structural, symbolic, and everyday violence. This new definition of racism can be used to combat the stigmatization of race-centered politics in Brazilian political discourse.

The direct political violence of colonization and the slave trade depended on a symbolic violence that defined people of African descent as inferior, uncivilized, and backward. This political violence developed into the institution of slavery. Slavery in Brazil was a form of structural violence, relying on the exploitation of African labor for the benefit of the European colonizers. Prior to the abolition of slavery in Brazil, the continuum of violence directly controlled the fate of Afro-Brazilians through the interplay of political, symbolic, and structural violence.

Post-abolition, elite scholars attempted to define the role that the newly freed Afro-Brazilians would play in society. Relying on international social theories, Brazilian scholars attempted to prove the physical and social inferiority of the Afro-Brazilian presence in order to maintain pre-abolition power relations. The symbolic violence that characterized the era of colonization and slavery easily aided the spread of racist social theories that called for the whitening of the Brazilian population. These theories were embraced by the Brazilian public and the Brazilian government, solidifying a symbolic order that continues to marginalize Afro-

Brazilians to this day. While implicitly accepting this symbolic order, Brazilians also embraced Gilberto Freyre's myth of racial democracy. An attempt to glorify the unique contributions of the indigenous, African, and Portuguese influence on Brazilian nationality, the myth created the notion that Brazil was free of racial prejudice. This notion silenced the discussion of the contribution of racism to the formation of Brazilian social relations of power. Brazilians simultaneously promoted a symbolically violent whitening ideology and became infatuated with the idea that their country contained no racism. It was this very hypocrisy that facilitated the military governments attempt to exploit capoeira. While claiming capoeira as a unique expression of Brazilian nationality, the military government also actively tried to purge the African roots of capoeira. This expression of symbolic violence, combined with the repression of a military government and the growth of the tourist industry in Brazil to legitimate the governments attempt to exploit the Afro-Brazilian cultural presence.

More ethnographic evidence that specifically addresses the role of racism in Brazil is desperately needed. This project has highlighted some of the more prominent ethnographic accounts that discuss racism in order to contribute to the validation of the existence of racism in contemporary Brazil. This ethnographic research is supported by statistical evidence of racism in two major Brazilian institutions: the criminal justice system and the workplace. The continuum of violence helps to reinterpret this racism as a direct reflection of the violence that has characterized Brazilian history since its discovery. Afro-Brazilians remain oppressed by the existence of racism in Brazil. When this racism is reconceptualized in the continuum of violence, the links between Brazilian history and the contemporary manifestations of racism become clear. The continuum of violence provides a foundation for future empirical research on

how racism, or symbolic violence, is produced, experienced, and reproduced in contemporary Brazil.

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