# Student Honors Research Bulletin 1995-1996

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Foreword

The University Honors Committee is pleased to present the 1995-96 Student Honors Research Bulletin. Representing several colleges and departments, the papers are delightfully eclectic. Indeed, they provide readers with what amounts to a tantalizing smorgasbord: from an examination of dissonance in twentieth-century music to an examination of circadian rhythms in the cockroach, from a look at the U. S. women’s movement to a look at John Steinbeck’s prostitutes, from a study of the effects of crack cocaine upon school children to a study of the effect of selenium upon infected mice, and from a comparative analysis of home-schooling objectives to an analysis of Leonardo da Vinci’s drapery studies.

The quality of research and level of writing truly make these essays models of sustained undergraduate scholarship. We salute the student authors and commend the instructors who encouraged them. A special note of thanks is due Carol Calamaio, who saw the manuscripts through to publication.

Faculty are encouraged to nominate and students are cordially invited to submit papers--along with the appropriate Word Perfect disk--by May 15, 1996, for the 1996-97 edition of the Bulletin. All submissions are welcomed and will be given careful attention.

Sam McFarland & Walker Rutledge
Co-Editors
THE EFFECT OF SELENIUM SUPPLEMENTATION ON THE IMMUNE RESPONSE OF MICE WITH EXPERIMENTAL CHAGAS' DISEASE

Lynnette Brooks and Cindy Calisi

Introduction

History of the Disease

American trypanosomiasis, commonly known as Chagas' disease, has historically been limited to Latin America but has started to show itself in North America (Wendel and Gonzaga, 1993). There are as many as 16-18 million infected people in South America alone, and the number of immigrants to the United States increases each year, with unknown numbers being infected (Kingman, 1991). There is currently no cure for the disease.

In 1907, while working in Brazil, Carlos Chagas discovered, in certain human dwellings, a hematophagous bug carrying flagellates (later named Trypanosoma cruzi) in its hindgut. Through experimentation, he showed that these parasites could be found in the blood of animals that had been bitten by the bugs. In 1909, he found these same parasites in a young girl who was thought to be suffering from malaria. It was then that Carlos Chagas suggested that there might be an acute phase of the yet unknown disease. This led him to further experimentation, from which he later described a chronic phase (characterized by the disappearance of flagellates from the blood), the agents, the vectors, and some of the signs and symptoms of the disease. (Wendel and Gonzaga, 1993)

The hematophagous bugs that Chagas described are commonly known as kissing bugs. They are from the family Reduvidae (subfamily Triatominae). When these bugs bite, they defecate, leaving the protozoans on the skin of the victim. Trypomastigote stages then usually enter the body through mucosal membranes. Once within host cells, these parasites will transform into the amastigote stage and differentiate back into trypomastigotes. With the release of these trypomastigotes into the bloodstream, the patient enters the acute phase of the disease. (Wendel and Gonzaga, 1993)

Stages, Signs, and Symptoms

The signs and symptoms of the acute phase of Chagas' disease are varied. Most patients develop a chagoma, a localized swelling that appears at the site where the trypomastigotes enter the body. Other symptoms may include fever, diarrhea, vomiting, enlarged liver and spleen, and electrocardiographic abnormalities. Symptoms usually vanish within four to eight weeks in most adults. However, the acute phase is very dangerous to children under the age of two; three percent of this age group experience mortality from acute myocarditis. Meningoencephalitis is another factor for young children, as mortality due to meningoencephalitis has been shown to be as high as fifty percent. (WHO, 1991)

The chronic phase of Chagas’ disease is preceded by an indeterminate phase, which can be relatively short or can persist indefinitely. There are no signs or symptoms in this stage, but the patient will still test positively for anti-T. cruzi antibodies in serological tests. (WHO, 1991)

The chronic phase can take several forms, the best known being the cardiac form. In addition to the hypertrophy of the heart, which weakens the walls of the heart, ventricular conduction defects and varying degrees of arrhythmia can occur (WHO, 1991). Death can be very sudden in this form, potentially due to the bursting of the already thinned walls of the heart. Another form affects the digestive tract and is marked by megaesophagus, causing regurgitation and dysphagia, and megacolon, causing severe constipation and diarrhea (WHO, 1960). The nervous system is the site of the third chronic form, where functional disorders of
the cerebellum, alteration of dorsal root ganglions, and alteration of the sympathetic and parasympathetic nervous systems may occur (WHO, 1991).

Transmission

Chagas' disease can be transmitted in ways other than by the reduvid bug, such as blood transfusions, congenital transmission, and breast feeding. Because of the increasing number of Latin American immigrants, infection due to blood transfusions is North America's biggest T. cruzi threat. In Southern California alone, forty percent of all blood donors are Latin Americans. At present, blood banks are not mandated to test for T. cruzi, largely due to the fact that no commercial screening has been licensed by the FDA (Wendel and Gonzaga, 1993). Serological testing could be implemented, but is "laborious to perform and is not standardized" (Skolnick, 1991).

Los Angeles has started to implement a semi-screening of blood donors for Chagas' disease. Blood bank employees question potential donors about any associations they have had with areas in Latin America where T. cruzi is endemic. If the likelihood that these donors are infected with T. cruzi is great, then they are not allowed to donate. (Skolnick, 1991)

Treatment

Very little effective treatment is available for T. cruzi-infected patients. In the acute stage, nifurtimox and benznidazole may be administered. Both of these are effective against trypomastigotes, and nifurtimox has also been used in higher doses against meningoencephalitis. Allopurinol is another trypanosomicidal drug, but is still being tested for possible side effects. Other drugs, such as anticonvulsants, antiemetics, and antidiarrheals, can be used to offset the symptoms of the acute phase. "Restriction of sodium intake and administration of digitalis and diuretics" may be implemented to lessen the clinical manifestations due to myocarditis (WHO, 1991). Sedatives and intravenous mannitol are used for acute meningoencephalitis. (WHO, 1991)

The chronic stage of the disease is harder to treat than the acute. Megaeosophagus and megacolon are best treated by surgery. Cardiac problems may be treated by a variety of means. Antiarrhythmic drugs such as amiodarone can be used in conjunction with a pacemaker. Reduction of physical activity and peripheral vasodilators are also used. Patients are said to be cured when their serological tests are consistently negative for a year after treatment.

The body will mount its own attack against the disease during the acute phase. Antibody levels increase initially but fall during the course of infection. (WHO, 1960). Cytotoxic T-lymphocytes and natural killer cells are primarily responsible for lysis of the parasite, but "all phagocytic cells associated with the immune system have been found capable of engulfing and killing all developmental stages of T. cruzi" (Kuhn, 1989). Although these cells have the capability of destroying the parasite, T. cruzi-infected patients exhibit marked immunosuppression. The immunosuppression may, in part, be mediated by suppressor macrophages, which are responsible for the down regulation of helper T cells and the inability of T helper cells to produce interleukin 2 (Kuhn, 1989). Without interleukin 2 and T helper cells, the body is unable to defend itself successfully from the parasite. Selenium is a micronutrient that has been found to enhance the primary immune response and could therefore be beneficial in the fight against T. cruzi.

The Significance of Selenium in Biological Systems

Selenium is an essential mineral that is required in the human diet for maintenance of proper health. It is believed that the role
of selenium (Se) in the body is to function as an antioxidant, protecting the body against free radical energy and oxidant stress. The significance of Se can thus be found in its ability to prevent free radical damage and its possible role in preventing disease and other pathologies.

Free radicals arise from the single addition of electrons to an oxygen molecule. The resulting superoxide anion serves as the parent structure for a group of reduced oxygen products that are associated with oxygen toxicity. The free radicals formed from this parent molecule, such as the hydroxyl radical, can then react destructively with many biological molecules. Another oxygen radical arises when a molecule of oxygen absorbs energy, thereby giving rise to a singlet oxygen. (Harris, 1992)

These molecules and other reactive free radicals may then target molecules in the body such as unsaturated lipids in cell membranes, amino acids in proteins, and nucleotides in DNA, causing disruption of normal cellular function (Harris, 1992).

Selenium Requirements in the Diet

Before the 1950's, the study of Se was largely limited to its toxic effects. After the discovery of several Se-responsive conditions in animals in the 1960's, attention was brought to the nutritional properties of Se. One study by McCoy and Weswig in 1969 examined the offspring of Se-deficient mice, showing them to be hairless, sterile, and smaller in size than Se-sufficient mice. When in 1973 Se was found to be a constituent of glutathione peroxidase, additional attention was directed toward Se (Rotruck et al., 1973). Most data at that time suggested that a 0.1μg/g diet per day was sufficient for proper health. In 1989, after further research and dietary surveys, the recommended dietary allowance was set at 55μg/day for women and 70μg/day for men.

While the typical U.S. diet does supply the suggested levels of Se (Levander, 1991), there are a limited number of regions in the world in which Se levels have been found to be low. Se-deficient soils in China have been shown to be involved in Keshan disease, a cardiomyopathy that is endemic to broad areas of China (Yang et al., 1988). Finland has also been targeted as one of the low Se areas in the world. Because of these low levels, the Finnish government has added Se to soil fertilizers to increase levels in cereals and grains (Mussalo-Raurhamaa, 1993). Se bioavailability has also been shown to be low in the regional diet of Sao Paulo, Brazil (Cintra and Cozzolino, 1993).

The Functional Role of Selenium in the Cell

Se has a biological function in cells as an essential component of antioxidant enzymes. Included in the seleno-enzymes is glutathione peroxidase, an enzyme that functions in detoxification of hydrogen peroxide and lipid hydroperoxides (Rotruck et al., 1973). Two additional seleno-enzymes that can also function in preventing oxidant stress are phospholipid hydroperoxide glutathione peroxidase and selenoprotein P. Phospholipid hydroperoxide glutathione peroxidase functions in metabolizing fatty acid hydroperoxides in phospholipids. Selenoprotein P, produced in the liver and secreted into plasma, may also protect against oxidant stress or serve as a Se-transport protein (Burk and Hill, 1992). These types of antioxidant enzymes provide a major cell defense by protecting membrane and cytosolic components from free radical damage. This type of protection becomes particularly important during the immune response when neutrophils and other phagocytic cells release increased quantities of superoxides and hydrogen peroxides during the digestion of foreign organisms (Combs et al., 1975; Sheffy and Shultz, 1979).
The Effect of Selenium on the Primary Immune Response

Se has been credited with the capability of inducing several immunologic responses. Among these is increased antibody production, including enhancement of both immunoglobulin M and immunoglobulin G (Spallholz et al., 1973a). Along with antibody enhancement, Se may also alter the proliferative capability of T-lymphocytes (Roy et al., 1993).

Studies have indicated that dietary supplementation with sodium selenate can cause an increase in the amount of sheep red blood cell agglutinating antibody in mice. Mice receiving dietary supplementation of 0.7 and 2.8 ppm in chow diets exhibited an enhancement of antibody production as assayed by hemagglutination and plaque-forming cell tests (Spallholz et al., 1973b). An additional study by Spallholz et al., in 1973a, indicated that 3 or 5 ug of Se injected intraperitoneally could enhance the primary immune response of mice to sheep red blood cell antigen. The most effective response was shown to occur when Se was administered prior to or simultaneously with sheep red blood cell antigen.

Another study, performed on human subjects, showed an increased ability of peripheral blood lymphocytes to respond to stimulation by phytohemagglutinin and alloantigen. The increased response of the lymphocytes resulted in an increase of high affinity interleukin 2 receptor (IL2-R) on their surface. An increased expression of IL2 receptor was previously found to affect the cell proliferation and clonal expansion of cytotoxic T-lymphocytes in mice. The same regulation of T-lymphocyte-mediated responses was found to occur in humans receiving Se-supplementation in the form of a 200ug tablet taken daily (Roy et al., 1994).

Several additional studies have been done to examine the effect of Se on cancer and tumor growth. Schrauzer and co-workers (1976) found that Se-supplementation administered in supply water prevented tumorigenesis in C3H/St mice. Examining the effects of Se on Ehrlich ascites tumor cells, Greeder and Milner (1980) injected Se into mice with transplanted ascites tumor cells, and found that the mice receiving Se-supplements had a decrease in tumor cell growth compared to mice without Se-supplementation. The protective effect exhibited in the study was dependent on dose and chemical form (Greeder and Milner, 1980). The anti-tumorigenic effect of Se was again demonstrated by Poirier and Milner (1983) in a study utilizing Ehrlich ascites tumor-bearing mice. In this case, survival was found to be significantly increased in Se-supplemented mice related to unsupplemented controls. Mammary tumors and mammary cell lines in monolayer cell culture have also been shown to exhibit a significant decrease in growth when supplemented with Se (Medina et al., 1993). This same study also examined the mechanism by which Se activates its chemopreventive effects, suggesting that tumor cells may be blocked in the S-G2 phase of the cell cycle (Medina et al., 1993).

No single mechanism for all cancer types can be applied to the chemopreventive effects of Se, though it has been noted that these effects can be attributed to glutathione peroxidase activity (Rotruck et al., 1973). Several additional mechanisms also have been shown to exert chemopreventive effects, including the inhibition of tumor virus replication, alteration of carcinogen metabolism, and protection against carcinogen-induced DNA damage (Schrauzer, 1992).

Other studies have demonstrated selenium's protective effect during infectious disease. Desowitz and Barnwell (1980) demonstrated that Se, together with dimethyl diocadecyl ammonium (DDA), has the ability to enhance the protective immunity of mice to Plasmodium berghei (malaria), when given in conjunction with the P. berghei...
vaccine. The Se used in the study was administered to the mice in their drinking water at 2ppm. Although Se alone showed no effect on the *P. berghei* infection without vaccine, mice which were given the Se administration along with the vaccine and DDA exhibited a 90% survival with low parasitemia values (Desowitz and Barnwell, 1980).

Another study examined the response of Se-deficient mice to *Candida albicans* infection. Neutrophils from Se-deficient mice were found to have impaired ability to kill the yeast, *C. albicans*. The authors speculated that this may have been due to decreased glutathione peroxidase levels. Examining microtubule concentrations in the neutrophils, the investigators found the concentrations of these cellular components to be less in Se-deficient mice that in Se-supplemented mice. Because the immune response to *Candida albicans* infection is greatly dependent on neutrophil activity, Se deficiency may result in an impaired immune response to the infection (Boyne and Arthur, 1986).

In the present study we have examined the effect of Se on infection of mice with the protozoan parasite *Trypanosoma cruzi*. Because of the findings of previous studies, we hypothesized that Se may also have an effect on the immune response to *T. cruzi*. By studying parasitemia levels, mortality, and antibody titers during the course of *T. cruzi* infection in mice, the effect of various doses of Se-supplementation on the course of experimental Chagas' disease could be determined.

**Materials and Methods**

**Mice**

Thirty female C3HeB/FeJ mice (Jackson Laboratories, Bar Harbor, Maine) were used in this study. The mice were divided randomly into six groups of five mice each and were given Purina Rodent Chow and tap water ad libidum throughout this study.

**Selenium Supplementation**

Mice in both the control group and group 1 were maintained on Purina Rodent Chow and tap water. Starting two weeks prior to infection, anhydrous sodium selenate was added to the drinking water of groups 2-5 throughout the course of the study as follows: Group 2-2ppm, Group 3-4ppm, Group 4-8ppm, and Group 5-16ppm. The Purina Rodent Chow contained an additional 0.2ppm.

**Parasitemia Determination**

Each mouse in groups 1-5 was infected on October 4, 1994, with 1000 blood-form trypomastigotes of *T. cruzi* (Brazil strain) by intraperitoneal injection. Weekly, beginning October 18th, 4ul of blood was collected from the tip of the tail of each mouse for a parasite count. The 4ul sample of blood was diluted with 96ul of Dulbecco's phosphate buffered saline (DPBS), (Sigma Chemical Co., St. Louis, MO), and the number of parasites counted using a hemacytometer.

**Antigen Preparation**

To prepare antigen for use in the enzyme-linked immunosorbent assay (ELISA), a PSC3H murine fibroblast cell line infected with *T. cruzi* trypomastigotes was cultured in RPMI-1640 medium supplemented with 20% newborn calf serum. The cell culture reagent RPMI-1640 was made by hydrating RPMI 1640 media (Sigma Chemical Co., St. Louis, Mo.) in distilled water. The medium was then supplemented with 20% newborn calf serum (Microbiological Associates), 25mM of HEPES (Sigma), and penicillin/streptomycin. The medium was then filter sterilized. Cells were cultured in sterile T-flasks and incubated in 6% CO₂ in air and high humidity.

The culture supernatants containing trypomastigotes were removed from each T-flask and filtered through a Whatman #1 filter paper. The filtered supernatant was
then centrifuged for 20 minutes at 1800 RPM. The supernatant was removed and discarded and the remaining pellet (containing parasites) was resuspended in 500ul of PBS. The parasites were then centrifuged again for 20 minutes at 1800 RPM. The supernatant was removed and the pellet resuspended in 500ul of PBS.

Following the final wash, the combined parasite pellet was resuspended in ice-cold PBS containing 0.5% Triton X (Sigma), placed on ice, and vortexed multiple times over a 30-minute period. The resulting solution was spun at 8,000 RPM for 20 minutes to remove non-soluble material; and the supernatant was collected. A protein assay was performed on the antigen solution to determine concentration by utilization of the Biorad Assay kit (Biorad), using bovine serum albumin as a standard, according to manufacturer’s instructions.

**Preparation of Mouse Plasma**

Plasma from infected and non-infected mice was collected weekly during the course of the *T. cruzi* infection. Plasma was collected from each mouse in each group from weeks 3 to 9 post-infection. 20ul of blood was drawn from each mouse via a tail bleed and diluted in 80ul of DPBS. Diluted blood was then centrifuged at 8,000 RPM for 10 minutes. The diluted plasma was then removed and stored in a -20°C freezer until use.

For use in the ELISAs, plasma from all mice in each group was combined and used as a single sample for each week of infection. As a result, there were 5 samples for each week of infection, one from each of the groups. Groups containing fewer than 200ul of serum on later weeks of infection, due to mortality, were not measured for antibody levels.

**Indirect ELISA**

Individual wells of 96-well microtiter plates were incubated with 100ul of a 10ug/ml concentration of *T. cruzi* antigen for approximately 48 hours at 4°C. After incubation with antigen, the plates were then rinsed 3 times with 1xPBS using a squeeze bottle, with equal pressure applied throughout when rinsing and flicking each plate dry in between washing. The plates were then patted dry. A 2.5% Carnation Instant Non-fat Milk solution in 1xPBS was used as a blocking solution. 200ul of blocking solution was put into each well and incubated for one hour at room temperature.

200ul of the 1:4 diluted plasma was diluted in 200ul of 2.5% milk blocking solution in order to produce a 1:8 dilution. A two-fold serial dilution was duplicated for every group each week that plasma was collected.

After all dilutions were made, plates were incubated at 37°C for 2 hours. After incubation, plates were washed 4X with 1xPBS as previously described. For use as a secondary antibody, a goat anti-mouse immunoglobulin conjugated with horseradish peroxidase (H+L) - HRP (Southern Biotechnology Associates, Inc.) was diluted 1:1000 in a 2.5% Carnation skim milk solution in PBS. 200ul of the conjugated secondary antibody solution was then added to each well and incubated at room temperature for one hour. After incubation, plates were rinsed with an automated microplate rinser. o-Phenylenediamine dihydrochloride (Sigma) was used as the substrate. Each tablet contained 30 mg and was diluted in 10ml of Tris-citrate buffer. The substrate solution was then activated with hydrogen peroxide, and 50ul of the substrate was added to each well and incubated for 15 minutes at 37°C. After the incubation period, plates were read in duplicate by a Microplate reader (Property of Vanderbilt University) for absorbance values at 490nm. Antibody titers were determined according to the following equation:

Titer=Highest dilution of test serum in which the absorbance is > mean
control absorbance ± 2 standard deviations and > .05nm.

Statistics
An ANOVA (analysis of variance) was done to test for treatment effects on parasitemia levels between groups. An A Posteriori test of each supplemented group versus control was performed to determine statistical differences in parasitemia and antibody levels between treatment groups. Because this analysis involved multiple tests, the Bonferroni correction was applied. Significance was assessed based on Bonferroni-adjusted criteria. \( P_{\text{critical}} = 0.5/# \text{of tests} = 0.05/4 = 0.0125 \) There was insufficient data available to perform a statistical correlation between antibody and parasitemia levels.

Results
Parasitemia Values
Mice infected with \(10^5\) blood-form trypomastigotes began exhibiting parasites on week 3 (day 35) of \(T. cruzi\) infection. Parasitemia levels were low (less than \(3.0 \times 10^5\) parasites/ml) in the first four weeks of infection for all treatment groups and increased to peak levels on week 7 (day 50) post infection.

Mean peak parasitemia levels were determined for each treatment group by averaging the highest parasitemia value obtained during the first 8 weeks of infection for each mouse in that group. After averaging individual groups, parasitemia values for all supplemented groups were also averaged. The mean peak parasitemia for all supplemented groups was \(3.9 \times 10^6\) parasites/ml compared to \(7.0 \times 10^6\) parasites/ml for the group without Se-supplementation. Supplementation of the mice infected with \(T. cruzi\) resulted in a 43.7% decrease in the number of parasites per ml in the combined treatment groups (see Fig. 1).

The mean peak parasitemia levels for each group during the entire course of infection were 7.0 \(\times\) \(10^6\) parasites/ml for the unsupplemented infected group, 4.7 \(\times\) \(10^6\) parasites/ml for the group receiving 2ppm Se, 2.75 \(\times\) \(10^6\) parasites/ml for the 4ppm Se group, 5.26 \(\times\) \(10^6\) parasites/ml for the group receiving 8ppm Se, and 3.0 \(\times\) \(10^6\) in the group supplemented with 16ppm Se (see Fig. 2).

Multiple A Posteriori comparison tests for significant differences between treatment groups indicated that the parasitemia levels of the Se-supplementation groups were significantly different (\(p=.002\)) from the groups without Se-supplementation. The groups receiving 4ppm and 16ppm of Se were also found to be significantly different (\(p=.001\) and \(p<.001\), respectively,) from the unsupplemented group. Groups receiving 2ppm and 8ppm were not found to be significantly different from the unsupplemented group based on Bonferroni adjusted criteria (\(p=.05\) for 2ppm; \(p=.037\) for 8ppm).

Mean parasitemia levels for each week of infection were also determined for each group of mice. These values were obtained by averaging the parasitemia values of each mouse in each group for each week of infection. The progression of parasitemia levels during the course of infection is illustrated in Fig. 3.

Survival
Mice in group 1 (unsupplemented) began to show mortality by day 34 of infection and reached 0% survival by day 56. The percent survival was also determined for each Se treatment group throughout the study, and an average of percent survival for all the supplemented groups was calculated. Percent survival for the unsupplemented group versus the average of the supplemented groups is shown in Fig. 4. The supplemented groups showed an average of 40% survival at day 69 of infection.
Results for individual groups are shown in Fig. 5. Groups exhibiting the highest percent survival were those receiving 4ppm and 8ppm Se (60% survival at day 69). The mice in these two groups maintained 100% survival until day 37 and 43, respectively. Groups 2 (2ppm Se) and 5 (16ppm) exhibited the lowest survival (20%) of any of the supplemented groups. Group 2 reached 20% survival by day 56, and Group 5 reached this point by day 69.

ELISA
Antibody titers were determined for treatment groups during weeks 7, 8, and 9 of infection. Groups exhibiting high mortality before week 7 and having fewer that 200ul of plasma per sample were not measured for antibody titers.

Antibody titers were determined for groups receiving 2ppm, 4ppm, 8ppm, and 16ppm Se during week 7 of infection. The antibody titer for group 2 (2ppm) was 1/64, for group 3 (receiving 4ppm) was 1/128, for group 4 (8ppm) 1/128, and for group 5 (16ppm) 1/128 (see figure 6).

Antibody titers for week 8 post infection were found to be 1/128 for group 3, 1/128 for group 4, and 1/64 for group 5 (figure 7).

Only two treatment groups remained at week 9 post infection. Group 3, receiving 4ppm of Se, again exhibited a titer of 1/128, while the group 4, receiving 8ppm, exhibited a titer of 1/64 (see figure 8).

Antibody levels in the control non-infected group were measured for each week of infection. All exhibited absorbance levels close to zero with small standard deviations.

Discussion
Previous studies have demonstrated that Se is beneficial in improving the immune response of mice. For example, Spalholz et al. (1973) demonstrated that the primary immune response to sheep red blood cells could be improved by supplementation with Se and found optimal Se levels to be at 0.7 and 2.8ppm to enhance antibody production, while Desowitz and Barnwell (1980) found 2ppm to have a positive effect on infection with Plasmodium berghei. In a more recent study by Roy et al. (1994), peripheral blood lymphocytes of humans showed an increased ability to respond to stimulation when given Se-supplementation. Se has also been shown to have a positive effect on other infectious diseases and a chemopreventive effect on cancer in mice (Medina et al., 1983).

In the present study, the effects of Se on the course of experimental Chagas’ disease were examined. Mice in groups supplemented with Se exhibited mean peak parasitemias at levels 50% below the control group. C3HeB/FeJ mice are highly susceptible to T. cruzi and normally die during the acute phase of the disease. None of the supplemented groups exhibited 100% mortality. At the end of the study, parasitemia levels dropped to zero for three weeks in all surviving mice (supplemented groups only). As of April 26, 1995, these mice continued to remain alive and showed no visible sign of disease. Further experimentation would be necessary to examine the mice for pathology and to determine if any intracellular stages of the parasite remain. No mortality was observed after day 69 of infection, leaving groups 2 and 5 at 20% survival, and groups 3 and 4 at 60% survival.

Groups 3 and 4 proved to have the optimal levels of selenium supplementation, 4ppm and 8ppm respectively. Although the mean peak parasitemia for group 4 was not found to differ significantly from that of the control group, one mouse in group 4 had an uncharacteristically high peak parasitemia compared to the rest of the mice in the same group. Excluding the data for this mouse reduces the mean peak parasitemia for group 4 to 3.5 x 10^6 parasites per ml, which is statistically different from the control group. By contrast, although group 5 had a low mean peak parasitemia level, mortality in
this group was 80%. It may be that Se-supplementation initially improved the immune response in group 6, but the high levels of Se (16ppm) could have eventually become toxic to the mice. Further testing will be required to evaluate this hypothesis.

The production of antibodies is an important mechanism in the body's immune response to Chagas' disease. Previous research has shown that Se-supplementation does enhance antibody titers in mice (Spallholz et al., 1973). Results of the assay performed in this study do confirm that a parasite-specific antibody response was mounted in the mice infected with T. cruzi. However, the results obtained were inconclusive in determining the effectiveness of Se-supplementation on antibody levels.

Antibody titers were determined only for weeks 7, 8, and 9 of infection. Group 1, receiving no Se-supplementation, exhibited a high mortality rate by week 7 and a 100% mortality rate by week 8 of infection. Antibody titers were therefore not determined for this group, and because of this, we were unable to make comparisons between the supplemented and unsupplemented groups.

Comparisons made between treatment groups receiving Se indicated that there were no statistically significant differences in absorbance measurements between any treatment groups. Despite this lack of significance, titers were found to be higher in groups 3, 4, and 5 than in group 2. Titers in group 3 remained consistent over the three weeks of infection, exhibiting a titer of 1/128. Titers in group 4 remained 1/128 until week 9 of infection. Antibody titers dropped in group 5 during week 8 of infection with a drop in survival rates also seen in this group.

These results may be inconsistent with the normal course of antibody levels in Chagas' disease. The World Health Organization, 1960, found that antibody levels drop during later stages of infection, typically during the chronic stage of infection in which there are no parasites found in the peripheral blood. The antibody titers obtained for the groups receiving 4ppm and 8ppm of Se remained high even when parasitemia levels reached zero in the peripheral blood. These results may suggest that Se does have some effect on antibody production, but further study is needed to examine more completely the effect of Se on antibody production.

Although Se may not be a cure for Chagas' disease, it appears to have had a protective effect in an experimental model of the disease, possibly by improving the immune response. Levels of 4ppm and 8ppm Se exhibited a positive effect on the parasitemia values, survivalship, and antibody levels examined in this study.

Further experimentation will be required to determine the mechanism(s) by which Se improves the immune response. Other immunologic responses should also be analyzed in order to more carefully monitor the effect of Se on this experimental disease model. Repeating this study, using higher and more closely controlled levels of Se, could possibly reveal stronger correlations between Se and Chagas' disease.

Bibliography


mice fed selenium. *Infection and Immunity* 11: 841-842.


Figure 1. Mean Peak Parasitemia Levels. Mean peak parasitemia levels were averaged for each group through ten weeks post-infection. Group 1 un-supplemented, Group 2 supplemented. Bars represent SEM. SEM's reveal a statistically significant difference between groups.
Figure 2. Mean Peak Parasitemia Levels. Graph shows a comparison of control to individual treatment groups. Group 1-unsupplemented, Group 2-2ppm, Group 3-4ppm, Group 4-8ppm, and Group 5-16ppm. Bars represent SEM. SEM's reveal statistically significant differences between groups 1 and 3 and groups 1 and 5.
Figure 3. Average Parasitemia Levels. Average parasitemia levels for all groups through week ten post-infection. Control-unsupplemented, Group 2-2ppm, Group 3-4ppm, Group 4-8ppm, and Group 5-16ppm.
Figure 4. Percent Survival. Comparison of unsupplemented to the average of supplemented groups. Data for all supplemented groups pooled and the average percent survival was calculated for each day of infection.
Figure 5. (a, b, c, d) Percent Survival. Comparison of unsupplemented control to individual treatment groups. Control-unsupplemented, Group 2-2ppm, Group 3-4ppm, Group 4-8ppm, and Group 5-16ppm.
Figure 6. Antibody levels at week 7 post infection. Data represents absorbance values from ELISA. Control, group 2-2ppm, group 3-4ppm, group 4-6ppm, and group 5-16ppm.
Figure 7. Antibody levels at week 6 post infection. Data represents absorbance values from ELISA. Control, group 3-4ppm, group 4-8ppm, and group 5-16ppm.
Figure 8. Antibody levels at week 9 post infection. Data represents absorbance values from ELISA. Control, group 3-4ppm, and group 4-8ppm.
Tradition and trend will always affect art. The only art to be left unaffected will be that of the artist who has instigated the trend and defied the tradition. In music, while dissonance has always been present in the works of great composers, it was the arrival of the twentieth century that saw the roles and applications of dissonance become extremely prevalent in music. With the rapid rise of industry and technology, artists could not help but be affected by what went on around them. In the days of Mozart, it was not hard to picture an elegant, aristocratic family being daintily entertained by a classical dancer moving to the beautiful, consonant music of the time. In the 1950's, it was not surprising to hear the sharp, coarse, dissonant, and disturbing music of the twentieth-century composer while factories blew poisonous smoke, noisy cars roared down polluted streets, and drugs ruled the lives of urban citizens. The times have changed, and so has the music. It was the tradition of the 17th, 18th, and 19th centuries to produce moving, dominantly consonant music; any more extreme uses of dissonance were railied at by the critics for breaking tradition. Tradition is the hardest thing to break, but it must give way to new traditions. Consonance had played the dominant role in music since its inception, and the twentieth-century composers became fascinated and obsessed with its polar opposite, dissonance. The old tradition gave way to the new one. Tonality was discarded for atonality, and the modern composer saw an entirely new musical world in which to feed his muse. Painters of the time began using more violent shades and combinations of colors in their paintings, and the subjects of their pictures were more disturbing and surreal than ever before. The attitude of the world was altered by the social and technological changes that were taking place within it. And these changing attitudes became the source for new artistic directions that were to mark the time and reflect it.

In order to fully understand these concepts, the reader may benefit from a cursory education in music theory. The following definitions are taken from *The American Heritage Dictionary*, 2nd ed:

1. **con-so-nant** (kon s n nnt) adj. (1) In agreement or accord. (2) Harmonious in sound.
2. **dis-so-nance** (dis' -n ns) n. (1) Discord. (2) Music--A combination of tones that sounds harsh and is often suggestive of an unrelieved tension.

Below is an outline detailing the seven steps of the major and minor scales:

I ii iii IV V vi vii (Major)
i i II III iv V VI v vii (Minor)

All music in the western world is based on this seven-tone diatonic scale. There are two main types of scales -- major and minor (there are others, but for the purposes of this study, they are not necessary). A major scale, when sounded on an instrument or sung, gives the feeling of elation; when the same is done with a minor scale, a feeling of sadness or darkness is conveyed. For each of the seven scale tones, there is a chord based on that tone. In the above outline, the upper-case Roman numerals stand for the PRIMARY CHORDS. The lower-case Roman numerals stand for the SECONDARY CHORDS. Traditionally, a musical piece is an exercise that revolves around the primary chords of the scale. The primary chords are what stand out in the listener's mind, and the movement between them is very natural (this is all nature and mathematics). Because this is the case, composers have always based their works around the primary chords of the scale. Secondary chords are traditionally less
memorable, and when they are used by composers, they have only a "passing" effect, eventually, a secondary chord is going to lead into a primary one. When someone hears a musician speaking about a "I-IV-V" progression in classical, blues, or rock music, this is what is meant.

Until the twentieth century, this theory of using primary and secondary chords had held firm sway in music. As the timeline approached 1900, composers began searching for a new direction to take; things began to happen and an interest was sparked in breaking the tradition of "I-IV-V" progressions. Composers became interested in making bizarre uses of secondary chords by stacking extra notes on them and "flattening" or "sharpening" the notes therein ("flattening" a note is dropping its tone by 1/2 step; "sharpening" a note is raising its tone by 1/2 step) in a wild fashion. Although the basic theory of using primary chords remained, the rules of tradition were being bent and broken in every way, thus producing music that was differently brooding, dissonant, and dynamically unpredictable; for example, within four bars of music, the orchestra would fluctuate in volume from a delicate whisper to a thunderous, sinful piercing, and then back to softness.

Historically speaking, there is some ground to be covered. A Scottish poet and philosopher named James Beattie (1735-1803) is quoted in Weiss and Taruskin’s Music in the Western World as stating:

Some notes, when sounded together, have an agreeable, and others a disagreeable effect. The former are "conords," the latter are "discords." Musicians have taken pains to discover the principles on which concords and discords are to be so arranged as to produce the best effect. (292)

Indeed, this is the case with composing. This has always been the case. During the Middle Ages, certain harmonies and intervals (an interval is the distance between two notes) that produced a discordant effect were banned by the church for sounding "evil." Only "happier," more consonant-sounding harmonies were to be used. Since the church was the center of European culture, it made all the rules concerning music. With the approach of the Renaissance, people became "alive" again, and the music was revived with them. The church remained an important social staple, but the paranoia of the Middle Ages was diminished by the newfound livelihood of the Renaissance artists. Yet the tradition of consonance remained. Discordant harmonies were not avoided by composers any longer because of the church; they were avoided because the trend of the Renaissance was that of the celebration of life. People were not used to hearing discordance; therefore, the majority of them disliked it and preferred a more consonant sound. However, when considering these facts, one must realize that the musical standards established during the Middle Ages and the Renaissance (or any other previous period for that matter) which dictated what was discordant were quite different from the modern-day standards that dictate it. What was considered dissonant during the Middle Ages would probably be considered quite consonant in the twentieth century.

Out of the Renaissance came what is known as the Baroque Era. This period of musical history was based on the theory of music as imitation, with emphasis on the vocal. Consonance, of course, held the primary seat in composition. Yet out of the corners of the Baroque Era came a sounding brass of dissonance. A composer named Claudio Monteverdi (1567-1643) worked at the Gonzaga court in Mantua as violinist, violist, and composer from 1589 to 1612 and later worked as the "maestro di capella" at
Monteverdi was among the first known composers to innovate a wider use of dissonance; although his use of it is quite mild compared to its use in the twentieth century, he nevertheless shocked listeners and was an early instigator of the dissonant craft. Of course, his harmonic innovations did not go without criticism; critic and theorist G. M. Artusi (1540-1613) singled out Monteverdi’s "Anima mia perdon" and "Cruda Amarilli" for critical attack (256). In his fifth book of madrigals, Monteverdi replied to Artusi’s criticism by saying,

[C]oncerning consonances and dissonances, there is another way of considering them, different from the established way, which...defends the modern method of composing (257).

Indeed, Monteverdi considered himself a modern composer, and not a traditional one; he defied the tradition and instigated the trend.

The Baroque Era eventually dissolved in the mid-late eighteenth century into what is now termed the "Classical" or "Romantic" period. The old theory of music as imitation gave way to the new theory of music as "expression." The soon-to-be "Classical" composers viewed music as an art that acted profoundly on the senses; they saw it as an emotional exercise more than an intellectual exercise (as had been the case for many centuries). With the European cultural center moving away from the church, music was now being publicly performed. In the earlier days, the royal court was the primary venue for musical performance; it was an aristocratic entertainment. The only other place it had been performed was, obviously, in church. Public performances were now common at various venues all over Europe. No longer an aristocratic staple, music was expanding. These ideas would remain influential into the twentieth century.

The nineteenth century saw the ideals of music as "expression" expand and flourish in works of Schumann, Chopin, and Mussorgsky. As 1900 lurked nearer, a new movement evolved—"Impressionism." Originally a trend in painting, Impressionistic characteristics (according to Stolba) are "[A]voidance of sharp outlines and formal precision, reliance on the effect of light and color, and a certain fluidity of design" (590). The paintings manifest both blurring and brilliance (590). Of course, a parallel movement sprung up in music—the head figure of Impressionism being Claude Debussy (1862-1918), though he didn’t like the label and preferred to be called a "Symbolist." Other notables in this movement are Ravel, Boulanger, and Satie.

The Academie des Beaux Arts cautioned Debussy in 1887 against excessive use of musical color, but he did not heed this caution and instead innovated an entirely new trend in music. Debussy’s music is characterized by "irregular phrases and blurring of formal outlines, avoidance of
traditional harmonic progressions (i.e. I-IV-V), use of streams of chords in parallel motion and altered chords with unresolved dissonances, and choice of instruments for their coloristic possibilities" (Stolba, 591).

Impressionistic composers wanted to create an atmosphere; they wanted to suggest rather than define; and they wanted to hint rather than state. Like Monteverdi, Debussy wrote unresolved dissonances and ignored the regular traditions in composing. Although Impressionistic music is largely tonal, the leading tone (the core primary chord) is often suppressed--hence, another transgression of tradition.

Not long after the birth of Impressionism, a new movement came to life—that of "Expressionism." According to John and Dorothy Crawford in Expressionism in Twentieth-Century Music, expressionism is "the most extreme form of subjectivity projected through the most extreme vocal, instrumental, and technical means of which composers are capable" (Goosen, 1445). This description makes sense when one considers the extreme dynamic, dissonant, and sometimes violent character of Expressionistic music. Champions of this style include Schoenberg, Berg, Webern, Bartok, and Stravinsky. The University of Alabama's F. Goosen comments in his Choice review of Expressionism in Twentieth Century Music that an argument could be made that Expressionism was the "art of angry young men, a manifestation of high levels of angst and testosterone" (1445). This argument is quite legitimate when the analyst pays mind to the youth of most Expressionistic composers (or the composers in their Expressionist stage).

Atonality was a staple in much of the Expressionists' works. The early twentieth century witnessed the birth of jazz and blues, which would ultimately affect the classical music of the time. In France, "Les Six Francais" was formed at the Paris Conservatoire. Among them was Francis Poulenc (1899-1963). "Les Six Francais" held the desire to create music devoid of German characteristics (Stolba, 596). In addition, they advocated

(1)Choosing subjects from everyday life for use in program music, operas, and ballets; (2) using machines as instruments or source material; (3) writing for nonconventional as well as conventional instruments; and (4) learning about styles other than those suited to the concert hall, e.g. circus band, jazz band... and writing in those styles... they so desired. (596)

As opposed to unresolved dissonances, Poulenc was more of the mind to use passing dissonances. His most notable works include his numerous Melodies (French solo song with keyboard accompaniment) and religious choral music (i.e. "Gloria").

Also composing at this time was John Cage (1912-1992). An American composer, Cage studied with Schoenberg in California and later studied in New York. Cage's bizarre musical endeavours include his "Imaginary Landscape," composed for 12 radio receivers by using a Zen method (taken from the Chinese spiritual document I Ching: The Book of Change) and three tossed coins to determine the wavelength, duration, and volume (numbers on the radio dial). He wanted to express musically the idea of zero thought. Though he precisely notated the choices chance determined, he stated that his work was indeterminant of composition and performance, meaning that "(1) chance operations produced the score, and (2) the performers' choices (the radio receivers) produced the sounds" (Stolba, 673). Other Cage works include "Concert For Orchestra and Piano," in which the musicians independently determine what pages of the score to play and what order to play them in,
with the conductor only keeping track of time elapsed; also, there is "4'33'', which is a piece for one or more instrumentals, entirely tacet. It was here that Cage wanted music that would let silence itself speak (Stolba, 673).

Amidst the bizarre classical music, jazz was reeling in dissonance and new wild trends as well. Being a very free form of music, jazz had more room for constant innovation--improvising being the key element to the music and its melodies. There could be arranged parts or there could be complete free form (everyone improvising at once). In his review of John Litweiler’s Ornette Coleman: The Harmolodic Life, David Ayers writes about Litweiler’s description of Coleman. Jazz was oftentimes background music, but Coleman declared, "Let’s play the music, not the background" (414). He insisted upon the complete freedom of all the ensemble instruments, and abolished fixed chord changes altogether. The musicians had to be highly practised to perform in this method, and Coleman’s music moved exhilaratingly from key to key. Sometimes atonal, it often had several key centers fighting for position, subtly shifted and subverted (414). This was bonafied "free jazz" (approximately 1959).

The influence of Debussy remained quite consistent in jazz with many of its composers, namely Miles Davis and Charles Mingus. Debussy’s harmonies were very much precursors of the "new age" style harmonies that would create jazz and, eventually, new age jazz and new age classical music (respectively, Michael Jones and Yanni). Hence, a crossover is established.

The 1950’s gave birth to rock music, and it wasn’t long until musicians in the field of rock began to do interesting things. The Beatles brought the pop influence into rock on a large scale, and innovated the sonic techniques of the art as well by dabbling in modulation of the guitar and vocal. The year 1972 saw the release of "Close to the Edge" by British fusion group Yes. They were conservatory-trained musicians who decidedly formed a band that would fuse the styles of classical, jazz, blues, flamenco, and numerous other genres into the rock format. Dissonance and consonance always fought for position in their music. In reference to the band members’ classical training, keyboardist Rick Wakeman commented that The Royal Conservatory in England (and others like it) was turning out musicians for a lifestyle that wasn’t around anymore—that is, the high-paying career of being a classical composer. Hence, they all decided to do something different with their vast musical knowledge. Other Yes efforts include "Fragile," "Tales From Topographic Oceans," and "Drama."

As 1980 arrived, bands such as Sonic Youth and The Police were carried into the forefront of popular music. An American band, Sonic Youth’s catalogue of music contains nearly twelve albums and countless singles--notable efforts including "Sister," "Confusion is Sex," and "Daydream Nation." In a 1990 interview with Guitar For the Practicing Musician, Sonic Youth discussed some issues of their music with interviewer Danny McCue. Guitarist Thurston Moore stated ". . . [W]e sometimes play two different tunings in a song, but we like the messy aspect, because it makes what we do much more an accidental music, which is exciting to us" (178). The band’s manic techniques range from wide uses of loud, harsh, dissonant feedback to striking guitar strings with drumsticks and screwdrivers. Guitarist Lee Ranaldo comments that ". . . feedback . . . is an element we use to great effect in our music . . ." and adds that "we can’t think in terms of scales at all . . . we don’t even think in terms of notes. We just think in terms of our ears . . . I guess . . . we’re . . . liberated from that whole . . . 'technically grounded’ scene" (178).
Rejecting all modal theory, Sonic Youth represented what music would become in the 1990's. Another musical gem of the early 1980's was "The Police," comprised of lead vocalist/bassist Sting, guitarist Andy Summers, and drummer Stewart Copeland. Hailing from England, The Police mended the stylings of rock, jazz, and reggae into their music. They oftentimes played in odd time signatures, and it was guitarist Andy Summers that brought the atonal, dissonant quality to much of the band's music. This is most evident on the band's 1980 release "Zenyatta Mondatta." Unlike Sonic Youth, The Police were quite proficient musicians in the theoretical sense. But the same idea of forwarding the craft by experimentation and new ideas remained, as prevalent in their stylistic mixings.

The previous pages are a sampling of some musical styles, both historic and contemporary, that have affected the music of the twentieth century. Men such as John Cage and Frank Zappa, representing some of the most extreme musical ideologies, composed into the early 1990's before they died; now, we have the end of a century upon us (actually, the end of a millennium) and in addition, a big musical question: where does it all go from here? With the erratic musical behavior of the twentieth century, many people wonder what else can be done. Where can new ground be broken? What new ground can be broken? The twenty-first century will bring about the answers, and hopefully a delightful era will ensue. Critics and historians could guess at what music will become--something new and more bizarre or a return to some traditional styles--but time and circumstance will ultimately dictate.

The Music (included on the accompanying cassette):

1. "Cruda Amarilli" by Claudio Monteverdi--a beautiful vocal piece from the Baroque Era. Listen for the slight dissonant irregularities in the vocal harmonies.
2. "Wozzeck" by Berg--a very disturbing Expressionistic piece. Notice the erratic, violent string movement coupled with the loud, borderline screeching vocal.
3. "Le sacre du printemps" by Igor Stravinsky--picture this with equally bizarre dance and costume choreography (as it was performed live). Also, notice the extreme dynamic qualities in volume.
4. "Claire de lune" by Claude Debussy--an Impressionistic piece for solo piano. Listen for various blurred yet beautiful musical colors. Also, pay attention to the chordal harmonies as they practically predict jazz in their tone and movement.
5. "The Shoes of the Fisherman's Wife Are Some Jive Ass Slippers" by Charles Mingus--this is live jazz from a 1972 recording. Notice the wandering character that the different instruments' harmonies assume, creating beauty and dissonance in the same place.
6. "Concerto For Two Pianos, movement I" by Francis Poulenc--a piece for two pianos and orchestra. Being a pianist himself, Poulenc knew the instrument well. Listen how the piano opens the movement with a smashing dissonance that creates the image of someone literally banging on the piano.
7. "Close to the Edge" by Yes--an excerpt from the twenty-eight minute song. You will feel the pull of dissonance fighting consonance for the front seat in the song's exposition, and then you will see that a consonant melody does prevail after the third choral interjection.
8. "Driven to Tears" by The Police--this is Summer's eight-bar guitar solo from this 1980 song. Listen to the atonal quality of the notes he chooses to play, and their effect on the music.
Works Cited
STEINBECK’S PORTRAITS OF PROSTITUTES: PROGRESSION OF AN AUTHOR’S VISION
Rhonda Jenkins

Introduction

All of Steinbeck’s women are curious creations who are generally spoken of as stereotypes: the whore and the housewife. Many are nothing more than cardboard cutout representations, two-dimensional caricatures based on one or two simple, frequently stereotypical traits. In *Of Mice and Men*, for example, Steinbeck has the opportunity to create a meaningful female character in Curley’s wife. Instead, he chooses to make her no more than a combination of the promiscuous wife and the hopeless dreamer. Even when Steinbeck does create a complete, well-rounded female character—such as Ma Joad—he rarely creates a realistic one. She may be fully drawn in that she is complex and three-dimensional, but the result is still not a believable woman. Usually, she is genderless, with only one or two trite, stereotypically "feminine" traits. Steinbeck does not take the time to delve into a deeper understanding of how most women truly act or think, and so he populates his novels with women who behave more like androgynous beings than true women. Many, including Ma Joad, are more like Steinbeck’s men; others are objects of wishful thinking. Most of his prostitutes fall into the wishful-thinking category. These prostitutes show up in one form or another in many of Steinbeck’s works, including his short stories. But Steinbeck creates fully drawn prostitutes in only four novels: *The Pastures of Heaven* (PH), *Cannery Row* (CR), *East of Eden* (EE), and *Sweet Thursday* (ST).

These novels also cover the complete span of Steinbeck’s writing career. *The Pastures of Heaven*, his second published novel, comes out in 1932, *Cannery Row* in 1945, *East of Eden* in 1952, and *Sweet Thursday*, near the end of his career in 1954. The prostitutes in these novels, through the changes in their personalities, lifestyles, and images, provide a look into the changes in Steinbeck’s own life and vision over the course of his career.

Although the prostitutes provide a storehouse of insight into Steinbeck, they have been largely ignored by critics. They are usually, but certainly not always, mentioned in critical analyses of the works in which they appear, and they are occasionally reviewed alongside his other female characters. A good overview of several of Steinbeck’s women is *The Indestructible Woman in Faulkner, Hemingway, and Steinbeck* by Mimi Reisel Gladstein, which touches briefly on certain prostitutes, namely the Lopez sisters of *Pastures of Heaven* and Suzy from *Sweet Thursday*. It does not, however, focus on them specifically as prostitutes, nor does it explore their role in Steinbeck’s romantic vision. The only critical work devoted entirely to Steinbeck’s prostitutes is Robert Morsberger’s article “Steinbeck’s Happy Hookers.” Morsberger provides a general overview of Steinbeck’s attitude toward his prostitutes in all of his novels, progressing from Steinbeck’s first novel, *Cup of Gold*, to *Sweet Thursday*, comparing that attitude with the treatment of prostitutes by other writers. In looking specifically at Steinbeck’s romantic vision, one sees that the prostitutes, and all of Steinbeck’s women, are passed over in favor of analyses of male characters.

Steinbeck’s romantic vision itself is frequently ignored in favor of a study of his realistic aspects. Steinbeck’s novels do have a surface realism, but he is at heart, as Jackson Benson says, "a disillusioned romantic idealist" (*Short Novels* 18). All of Steinbeck’s novels have characteristics of
traditional nineteenth-century romanticism, namely, the emphasis on nature and the search for an ideal. He presents his version of the ideal by emphasizing those realistic aspects that suit his vision and omitting those which do not. Nowhere is this pattern of picking-and-choose reality more evident than in his prostitutes.

Steinbeck's prostitutes are an ideal source of information on his vision. Because he is apparently never personally acquainted with actual prostitutes, all of them are the result either of his imagination or secondhand stories to which he provides much embellishment, making the prostitutes less realistic characters, perhaps, but also making them a useful gauge of his own vision. In other words, Steinbeck is not bound by reality. He feels free to create prostitutes as he would like them to be: sometimes all good, sometimes all bad, but rarely a combination of the two.

The prostitutes in these novels are also useful gauges because they occupy the middle ground in Steinbeck's characterization. They are not main characters, but neither are they as flat as the other minor characters. Steinbeck's main characters, almost always male, have a definite purpose, something to say, while the minor characters are flat, scantly drawn, and have no agenda. The most obvious examples of such main characters are Doc and Mack in Cannery Row and Sweet Thursday. In these two characters especially, Steinbeck creates blatant walking philosophies, which never deviate from the ideas they represent. The minor characters, however, have no such philosophies and could be written out of the book with no real effect on the overall impression of the novel. Frankie in Cannery Row is an excellent example. He is an engaging character who provides an interesting subplot, but he contributes very little to the novel as a whole and is generally forgotten by both readers and critics alike.

Steinbeck's prostitutes in these four novels fit in neither of those two groups. They are well-drawn, prominent characters, but they are never truly the main characters of the novels. They do have agendas, though. In addition to their plot purposes, the prostitutes serve to project Steinbeck's own vision and moral code. Superficially, they are his way of thumbing his nose at Puritanical morality. On a deeper level, he uses them to illustrate his views of God and the world.

The prostitutes are perfect representatives of Steinbeck's romantic vision and his moral code, even during the years when his romantic vision falters slightly. He creates his own ideals and his own truth, and then he creates stories which fit that truth. And always, his prostitutes prove the reality of his ideals. For Steinbeck, the world is a world of nature, ruled by "our father who art in nature" (CR 9). As long as an act is in accordance with these laws of nature, as he believes prostitution is, it is a good and sinless act. The sin, he claims, is not in the prostitution itself but in denying the need for prostitution and hindering it through narrow-minded righteousness.

However well it may fit into his ideals, Steinbeck is still occasionally of a divided mind when it comes to prostitution. At times, he looks upon it as a natural course of events, without shame or sin, which no one can rightfully condemn, a kind of fulfillment of natural desires which upholds the goodness and honor of women in general. At other times, he focuses on the degenerate whorehouses where perversion and the dirty, dark side of man reigns. This ambivalence, though more prevalent during the East of Eden period of his writing, shows up periodically throughout his career.

Steinbeck wavers in his portrayal of prostitutes between sentimental romanticism and some sort of realism. He begins with a lighthearted, purely sentimental treatment of prostitutes in The Pastures of Heaven. He
then presents his own personal version of reality in Cannery Row, followed by the gritty reality of East of Eden. He then reverts back to the original sentimentality with his sugary-sweet story of prostitution in Sweet Thursday. These fluctuations in his treatment of prostitutes correspond to the shifts in his romantic vision.

The Pastures of Heaven: Lighthearted Sentimentality

Fully drawn prostitutes first show up in The Pastures of Heaven, Steinbeck's collection of loosely connected stories about the inhabitants of a California farm community. The novel is published in 1932, when Steinbeck is only thirty years old, still living in the house in Long Grove provided by his parents, supported largely by his wife, Carol, and a stipend from his parents, free to write without worries. Biographer Jackson Benson describes Carol as a motherly figure who types his manuscripts, edits his work extensively, and takes care of the majority of the business side of Steinbeck's writing. While married to Carol, Steinbeck is free to remain carefree. During this time, he is just beginning to develop his romantic vision and moral code, and though he has until this time worked as a laborer for most of his adult life, what he sees of the world is still very bright and encouraging. This bright vision is evident in his story of Maria and Rosa Lopez in Chapter VII of The Pastures of Heaven.

Devoutly religious women, the Lopez sisters are left in poverty after the death of their father. They attempt to farm the barren land on which their little shack is built, but the hard dirt will not yield enough to feed them, and they starve until Rosa decides to open a Mexican restaurant. But, though they make the finest, thinnest tortillas in the valley, business refuses to flourish. One day when Maria is out, a customer eats three enchiladas, and in her gratitude, Rosa gives herself to the man. When Maria returns, Rosa confesses her sin to her sister, and after extensive prayer to their porcelain Virgin, the sisters agree that it is necessary for them to "encourage" the customers if they are to succeed. Whenever a customer eats three or more dishes, "the soft hearts of the sisters broke with gratitude, and that man became a candidate for encouragement" (PH 113).

The sisters do not, in Steinbeck's mind, become degenerate, sinful women. In fact, he does not refer to their business as prostitution. They only accept payment for the food. On one unfortunate night, a man who cannot eat three enchiladas offers Rosa "the money of shame" (PH 113). Rosa is enraged and insulted and sends him away. Also, the sisters maintain their religion. They pray devoutly to their Virgin immediately after each sin, until "under the Virgin there was a polished place on the floor where they had knelt in their nightdresses" (PH 112).

But the ladies in the valley know about the encouragement that takes place at the Lopez sisters' restaurant, and finally a jealous wife, whose husband was not even a customer of the restaurant, forces the sheriff to close them up for good. The sisters insist to the end that they are not running "a bad house," and they--and Steinbeck--believe they are not. However, faced with no means of supporting themselves, they prayerfully decide that they must go to San Francisco to be "bad women" for considerable profit. But throughout this episode, the Lopez sisters are portrayed as good, moral Catholics:

They remained persistently religious. When either of them had sinned she went directly to the little porcelain Virgin, now conveniently placed in the hall to be accessible from both bedrooms, and prayed for forgiveness. Sins were not allowed to pile up. They confessed each one as it was committed. (PH 111-112)
Steinbeck seems to feel, and makes it clear that he expects his readers to feel, that the sisters are fully justified in their prostitution. They are breaking none of his moral laws, for they are only doing what is necessary to feed their bodies; they are fulfilling a very real and natural need in the valley; and they ask their Virgin for forgiveness immediately after each and every sin. So long as they can accept what they do without guilt, Steinbeck seems to be saying, then they are not guilty.

The sisters are carefree and jovial, living a life full of laughter and simple pleasures. They suffer no retributions that they cannot accept; they are not punished for their actions. In fact, under Steinbeck’s theory of moral law, it is their acceptance of their situation that makes them free from guilt. They accept that they must prostitute themselves to survive. They accept that they will be forgiven for doing so if only they ask their Virgin to forgive them. They set up their own moral law, and they live by it, and since that moral law is in accordance with Steinbeck’s law of nature, the Lopez sisters remain good and moral women in his eyes.

The true villains in this story are not the “bad women” who are simply following nature’s laws; the villains are the so-called upstanding ladies of the valley who do not understand or refuse to accept the realities of nature, the ladies who look coldly upon the sisters and act out of unfounded jealousy to put Rosa and Maria out of business.

It is not known whether or not this particular story is based on actual events (most of The Pastures of Heaven comes from stories told to Steinbeck by Carol’s friend and business partner, Beth Ingels, who grew up in such a place and was planning her own book based on her childhood neighbors there), but whether the stories are real or not, this particular story fits well with Steinbeck’s life in 1932. For him, this is reality. Steinbeck lives the carefree life he describes in the Lopez sisters’ story, and he is well known for purposely going against society’s accepted standards: during his college years he frequently embarrasses his sister Mary with his calculated subversion of social rules. Benson suggests that Steinbeck feels betrayed by Mary, with whom he was quite close during their childhood, because she chooses to join in the sorority life at Stanford while he is doing whatever he can to thumb his nose at that kind of social order. And the account of Steinbeck’s life until this time reads as a virtual laundry list of a young man’s acts against the rules of society: though his father can, and probably does, arrange for good summer jobs which will advance Steinbeck’s career, he chooses to work at manual labor during the summers; he spends several years at Stanford, doing quite well both in English and in marine biology classes, but he never bothers to fulfill the requirements for a degree; he shows up at Mary’s sorority dances in a Chinese laundry truck, with a Chinatown girl as his date—absolutely unheard of, and even offensive, in Stanford society in the 1920’s. Though Steinbeck may have grown up slightly in the few years that pass between his college antics and the writing of The Pastures of Heaven, he is still openly snubbing any social norm, and he uses the Lopez sisters to continue subverting society. In this carefree, humorous account of women who virtually fall into prostitution, he makes his case for the silliness of social rules, especially those which go against nature.

**Cannery Row: Steinbeck’s Own Reality**

The thirteen years which pass between The Pastures of Heaven and Cannery Row are some of the most eventful in Steinbeck’s life, both professionally and personally. During these years, he makes a name for himself as a writer, achieving critical and public recognition with Tortilla Flat, which assures his financial security. Within five years, he follows it with other meaningful works, including Of Mice and Men and The
Grapes of Wrath. He also covers the European war scene and writes propaganda works for the U. S. government. Thus, when Cannery Row comes out in 1945, John Steinbeck is well known to the American reading public.

By the publication of Cannery Row, Steinbeck has also seen great changes in his personal life. Both of his parents die during this period, his mother in 1934 and his father in 1936, before his career really takes off. He is divorced from his first wife, Carol Henning, in 1942. In 1943, he marries Gwyndolen Conger, and their first son is born in 1944. But while Gwyn is the mother of Steinbeck’s only children, Benson does not describe her as playing mother to her husband, as Carol had done. So during the time between The Pastures of Heaven in 1932 and Cannery Row in 1945, Steinbeck goes from a carefree young man living a haphazard life with his young wife and parents to support him to being an accomplished author, father, and something of an upstanding citizen, functioning very much within the society he had previously scorned. In short, John Steinbeck grows up.

But he is still fascinated with those who live his previous life, the carefree independents who function somewhere beneath or outside the culture that has absorbed him. And he still maintains a connection to that other society, most notably through his friend Ed Ricketts, whom Steinbeck meets during that same period, and who is a considerable influence on his life and his work, serving as the model for Doc in Cannery Row and Sweet Thursday.

Peter Lisca rightly identifies Cannery Row as an "escape into a counterculture, . . . a philosophically based and impassioned celebration of values directly opposed to the capitalist ethic dominant in Western society" (112). And Cannery Row truly does represent Steinbeck’s return, to a degree, to solitude, away from the confines of society. It signals his return to the California landscape at a time when, ironically, he had left California, first to cover the European war scene, then to make his home in New York.

Steinbeck claims that he wrote Cannery Row as an escape from the war, that it "was a kind of nostalgic thing, written for a group of soldiers who had said to me, 'Write something funny that isn't about the war. Write something for us to read--we're sick of war.'" ("My Short Novels" 17). So instead of war, Steinbeck writes about religion and human values.

Robert S. Hughes speaks of Cannery Row in terms of traditional religion and philosophy. Hughes explains that Cannery Row is a blend of Christianity, Taoism, pantheism, and transcendentalism, inverting conventional morality by "denigrating middle class values--especially prudery and materialism--and championing the simple pleasures" (119). But most of all, Hughes asserts, "Cannery Row is ultimately a book about human values. And the values that emerge are just what we might expect from either prophets orbums" (131). Though Hughes focuses mostly on the "bums" of Cannery Row, his theories hold true especially well for the prostitutes, who are unquestionable champions of simple pleasures denigrating middle-class values. And it is the prostitutes who carry out the human values espoused by Steinbeck’s prophets, Mack and the boys.

In this short novel, Steinbeck first verbalizes his theories of God, nature, and man:

Our Father who art in nature, who has given the gift of survival to the coyote, the common brown rat, the English sparrow, the house fly and the moth, must have a great and overwhelming love for no-goods and blots-on-the-town andbums, and
Mack and the boys. Virtues and graces and laziness and zest. Our Father who art in nature. (CR 9)

Cannery Row is Steinbeck’s treatise on human nature, and that nature is evident in Dora Flood and her prostitutes at the Bear Flag Restaurant.

Dora and her girls, like the Lopez sisters, are essentially good people. They are Steinbeck’s standard “whores with hearts of gold,” running soup kitchens during flu epidemics, buying groceries for families struck by the Depression, and shredding their lingerie and evening gowns to make a new quilt for Doc. When one of them gets too old to work any longer, Dora keeps her on at the Bear Flag, feeding her three meals a day and giving her a place to live. Steinbeck acknowledges the dark undertones of their lives only for comic effect, showing Phyllis Mae, for example, engaging in fistfights and Indien wrestling, without speculating about what kind of life she must have lived to have made her so adept at physical violence. He hardly acknowledges the true nature of their business at all. There is only passing mention of actual prostitution; the Bear Flag’s purpose seems to have little to do with actual sex and everything to do with sitting in the parlor being social.

Dora Flood, proprietor of the Bear Flag, is portrayed as a businesswoman who knows what society is and what she must do to succeed in it, much like Steinbeck himself at the time, who does not necessarily approve of society’s rules but understands that he must live with them and, in some cases, under them. She is superior, in his eyes, to the other women in Cannery Row who do not truly see what society is. They frequently make society’s rules, and they live according to those rules without ever considering whether or not those rules are good or bad. There are the “high minded ladies” intent on closing down the Bear Flag, who, like children, “had to be told who actually owned the property where vice was practiced, what the rents were, and what little hardships might result of their closing” (90, 91). Steinbeck portrays them as silly creatures who succeed in closing the Bear Flag during convention time and subsequently cause Monterey to lose five conventions for the following year. But Dora and her girls understand the business world, and the world in general. Dora knows that she offers the one commodity that cannot be purchased across the street at Lee Chong’s grocery, and she knows that to continue doing so, she has to pander to society’s interests, paying up to twenty times as much as anyone else to local charities, never denying a request for assistance.

The prostitutes of Cannery Row are also superior to other females in that they understand Steinbeck’s theory of nature and man, that there is no right or wrong, only how people are. The other women of Cannery Row are unhappy because they try to force their own wills on the will of nature, but Dora and the girls take things as they are and as they must be. Mrs. Malloy tries to infuse pink lace curtains into her world, only to cause herself more unhappiness because her world is windowless, and pink lace curtains do not belong on solid metal walls. Dora, on the other hand, understands what belongs and what does not. She runs a simple house, named to honor the community, where the atmosphere is friendly and conducive to the restful escape that her customers need and desire. Dora does not burst into tears as Mrs. Malloy does; she handles situations calmly, as Steinbeck’s male characters do. Because of her understanding of the laws of nature, Dora has made herself “respected by the intelligent, the learned, and the kind,” and hated by “the twisted and lascivious sisterhood of married spinsters whose husbands respect the home but do not like it very much” (9, 10).
This portrayal of Dora Flood, the madam who so perfectly embodies Steinbeck's view of natural laws, is based on the only actual prostitute he has any connection with, Flora Wood. Flora Wood is a friend of Ed Ricketts, in the same way that Dora Flood is a friend of Doc, and although there is no reason to believe Steinbeck ever meets her personally, he hears much about her from Ricketts. He describes the real-life madam in "About Ed Ricketts," his preface to The Log from the Sea of Cortez:

Across the street from Pacific Biological was Monterey's largest, most genteel and respected whorehouse. It was owned and operated by a very great woman who was beloved and trusted by all who came in contact with her except those few whose judgment was twisted by a limited virtue. She was a large-hearted woman and a law-abiding citizen in every way except one--she did violate the nebulous laws against prostitution. But since the police didn't seem to care, she felt all right about it and even made little presents in various directions.

During the depression Madam paid the grocery bills for most of the destitute families on Cannery Row. When the Chamber of Commerce collected money for any cause and businessmen were assessed at ten dollars, Madam was always nicked for a hundred. She halfway paid for the widows and orphans of policemen and firemen. She was expected to and did contribute ten times the ordinary amount toward any civic brainstrom of citizens who pretended she did not exist. (SC xxiv-xxv)

Steinbeck adopts almost the same description for Dora Flood in Cannery Row:

But on the left-hand boundary of the lot is the stern and stately whore house of Dora Flood; a decent, clean, honest, old-fashioned sporting house where a man can take a glass of beer among friends. . . .

As for Dora--she leads a ticklish existence. Being against the law, at least against its letter, she must be twice as law abiding as anyone else. There must be no drunks, no fighting, no vulgarity, or they close Dora up. Also being illegal Dora must be especially philanthropic. Everyone puts the bite on her. If the police give a dance for their pension fund and everyone else gives a dollar, Dora has to give fifty dollars. When the Chamber of Commerce improved its gardens, the merchants each gave five dollars but Dora was asked for and gave a hundred. With everything else it is the same, Red Cross, Community Chest, Boy Scouts, Dora's unsung, unpublicized, shameless dirty wages of sin lead the list of donations. But during the depression she was hardest hit. In addition to the usual charities, Dora saw the hungry children of Cannery Row and the jobless fathers and the worried women and Dora paid grocery bills right and left for two years and very nearly went broke in the process.

So Steinbeck bases Dora Flood on reality. The problem is that it is Steinbeck's own version of reality. He takes the story of Flora Wood, which, in fairness to Steinbeck, may be true for her but is certainly not true for madams or prostitutes in general, and which he knows is not true for prostitutes in general, and presents it as reality. Steinbeck consciously chooses one version of reality, which conforms to his ideas of right and wrong according to nature, over the more
gritty and more common reality that subverts his own ideals.

**East of Eden: Gritty Reality**

Steinbeck cannot continue to ignore grittiness, and he finally acknowledges it in *East of Eden*. He writes *East of Eden* at what he considers the pinnacle of his career, and he plans for it, his self-described definitive work, for years before he actually begins to write. By the time he does begin writing, he has not only grown into the functioning adult he is at the time of *Cannery Row*; he has also seen great personal tragedy. Between the publication of *Cannery Row* and the writing of *East of Eden*, Steinbeck suffers an ugly, painful divorce from Gwyn, the mother of his two sons, and shortly following the divorce, must deal with the death of his friend Ed Ricketts, who is killed when his car is hit by a train. Steinbeck’s own description of the time in a letter to his editor, Pascal Covici, shows the weight of the pain:

The last few years have been painful. I don’t know whether they have hurt permanently or not. Certainly they have changed me. I would have been stone if they had not. I hope they have not taken too much away from me. . . . This book will be the most difficult of all I have ever attempted. Whether I am good enough or gifted enough remains to be seen. I do have a good background. I have love and I have had pain. (*Journal of a Novel* 3, 4-5)

The appearance of *East of Eden*, his darkest work, right after so much personal tragedy is not mere coincidence; the pain of the preceding few years serves as preparation for this work, which Steinbeck considers his masterpiece. During this time, his romantic vision falters, and he begins to acknowledge the depravity of man. In *East of Eden*, he progresses from insisting that there is no sin to admitting the existence of absolute evil as embodied by Cathy. She is all evil, without any of the goodness that Steinbeck celebrates in his other characters. That same view of evil is evident in Steinbeck’s ambivalence toward the *East of Eden* prostitutes, some of whom are reminiscent of *Cannery Row*, but most of whom are debased and corrupt.

*East of Eden* contains Steinbeck’s only view of prostitution which most people would consider realistic. He tells the story of Mr. Edwards, "as coldblooded a whoremaster who ever lived" (EE 124), who is the exact opposite of the benevolent Dora Flood:

> Mr. Edwards had no trouble either in recruiting or in controlling his girls. If a girl was not properly stupid, he threw her out. . . . When any of his girls became pregnant they had the choice of leaving or of being aborted so brutally that a fair proportion died. In spite of this the girls usually chose abortion. (121)

There is none of the jolliness of the Lopez sisters or the good times of the Bear Flag Restaurant in Mr. Edwards’ business. And later, Kate’s house is a model of depravity, feeding on the dark underside of men’s needs and desires. She keeps her girls docile through fear and drugs; perverted pleasures become her specialty. She is like Dora in that she understands the nature of the men she serves, but unlike Dora, the nature Kate knows is dark and sordid instead of pure.

In *East of Eden*, prostitution comes out of the communal "restaurants" of *The Pastures of Heaven* and *Cannery Row*. No longer is the whorehouse a place to gather with friends for a drink and a laugh. Kate’s dirty business takes place in dark, lonely rooms, and it is a shameful business. Not
only do her customers not come with friends; they hope and pray their friends never find out they are there. The prostitutes turn ugly when they are alone with their men in those dark rooms.

Steinbeck does not depart entirely from his benevolent view of humanity, however. There are good houses in *East of Eden*; they just aren’t as prevalent. He describes the houses at the beginning of the century as welcoming, homey places:

If you wanted a good laugh and a poke in the ribs, you went to Jenny’s and got your money’s worth; but if the sweet world-sadness close to tears crept out of your immutable loneliness, the Long Green was your place. When you came out of there you felt something pretty stern and important had happened. It was no jump in the hay. The dark beautiful eyes of the Nigger stayed with you for days. . . .

Faye was the motherly type, big-breasted, big-hipped, and warm. She was a bosom to cry on, a soother and a stroker. The iron sex of the Nigger and the tavern bacchanalianism of Jenny had their devotees, and they were not lost to Faye. Her house became the refuge of young men piling in puberty, mourning over lost virtue, and aching to lose some more. Faye was the reassurer of misbegotten husbands. Her house took up the slack for frigid wives. It was the cinnamon-scented kitchen of one’s grandmother. If any sexual thing happened to you at Faye’s you felt it was an accident but forgivable. Her house led the youths of Salinas into the thorny path of sex in the pinkest, smoothest way: Faye was a nice woman, not very bright, highly moral, and easily shocked. People trusted her and she trusted everyone. No one could want to hurt Faye once he knew her. She was no competition to the others. She was a third phase. (289-290)

If Faye’s good maternalism is the third phase, then it is later pushed aside by the fourth phase: the ugly depravity of Kate’s house. Kate’s house symbolizes the darkness of prostitution. Her girls are not the active and bright girls of the Bear Flag; they are lazy and dull, frequently drugged, and working only until they become too ill or too old, when they are turned out onto the streets with no skills and no family. The nature of the customers has not only become debased, but Steinbeck does not even present the prostitutes as desirable in this novel. Nature, in his view, has gone bad all around.

Steinbeck claims that this picture is an accurate depiction of an absolute evil which actually exists in the world. In *Journal of a Novel: the East of Eden Letters*, in which he analyzes the novel as it is being written, he writes, "(Cathy) is a fascinating and horrible person to me. But there are plenty like her. That I know" (44), and "I have been perfectly honest about her and I certainly have her prototype" (46). Steinbeck does not say who that prototype may be, but he believes in the evil of Cathy. He believes it is real, and he believes it exists in this world.

But he still cannot bring himself to acknowledge the possibility that man can choose to be evil. Cathy is a completely evil creature, and she believes she is so by choice. Steinbeck, though, tells his readers that Cathy is what she is because of something she lacked at birth; he will not allow her to be completely human. Evil for Steinbeck comes in the form of a deficiency or a weakness, something regrettable and sad, but forgivable.
**Sweet Thursday: Sentimental Romanticism**

In his romantic idealism, Steinbeck cannot sustain a dark view for long. Once he has completed his definitive work, his vision takes a dramatic upswing. He comes out of the dark period of the late 1940's and early 50's into a social, family-centered life. He finally publishes *East of Eden*, the work he has anticipated for most of his writing career, and it receives much critical and public acclaim. In short, after *East of Eden*, Steinbeck is coasting. He returns to Monterey's Cannery Row for a lighthearted whorehouse story in *Sweet Thursday*.

As Morbacher so adeptly points out, "Malcolm Cowley called *Cannery Row* a 'poisoned cream puff' but *Sweet Thursday* is simply a cream puff, a sentimental romance with not enough satire or 'hooptedoodle'" (113). It is indeed sentimental, and even a little naive. Steinbeck shows that he knows all about the dark side of prostitution in *East of Eden*, but he shows that he can ignore that darkness in *Sweet Thursday*.

*Sweet Thursday* brings his readers back to Bear Flag, where Dora Flood has died and been succeeded by her sister Fauna, equally benevolent and more maternal. Fauna has made the Bear Flag into something of a training center for young girls, teaching them how to set the table correctly, making them walk with books on their heads to benefit their posture, encouraging them with a gold-star board heralding the achievements of former Bear Flag girls who have gone on to lead successful lives. One is president of the Salinas Forward and Upward Club, others are members of the Episcopal church choir, one is the wife of a Stanford professor, and yet another is married to the manager of the A & P. Strangely, there is again little mention, even indirectly this time, of any actual prostitution going on at the Bear Flag: there are rarely even men in the parlor in *Sweet Thursday*. Instead, it has more of a sorority house atmosphere.

*Sweet Thursday* is the only novel in which Steinbeck indicates that there may be some life beyond prostitution for these characters. Steinbeck’s women all fit into one category or another: most are either prostitutes or wives. As Gladstein observes, Suzy in *Sweet Thursday* is one of the few women in any of Steinbeck’s works who are allowed to move from one category to another. She voluntarily leaves the Bear Flag and prostitution, and by the end of the novel, Suzy is well on her way to becoming a wife and mother (92). Steinbeck indicates that the other Bear Flag girls may find a similar fate. Far from keeping them on until they’re too old to turn tricks any more, Fauna grooms her girls for marriage so that they can leave their prostitution behind to lead lives alongside the very same upstanding, respectable "gold star" ladies who in *Cannery Row* are trying to get the Bear Flag closed down. Suzy, the primary prostitute in *Sweet Thursday*, is the new girl who chooses prostitution as a vocation because she thinks it might be better than waiting tables. And apparently at the Bear Flag it is. Suzy leads a happy, carefree existence, and nowhere in the novel is there any description of the actual specifics of what prostitution entails, either for Suzy or for any of the other girls. Suzy and her compatriots are happy, healthy young girls, blonde and blue-eyed with big wide white smiles. Prostitution is presented as a wholesome, all-American way of life.

In *Sweet Thursday* there isn’t even the hint of the dark side of prostitution that we get in *Cannery Row*. It’s almost like an *East of Eden* backlash: after presenting absolute evil, Steinbeck goes overboard presenting total good while ignoring the evil that the readers know must be there somewhere.
Conclusion

Steinbeck creates prostitutes to suit whatever his personal version of reality may be at the time. Such characters develop as his vision and ideals develop, beginning with a fairly vague, lighthearted picture of the Lopez sisters, progressing to what he hopes to be reality in Cannery Row, to his view of depravity in East of Eden, and finally returning to sentimentality in Sweet Thursday.

Throughout all four novels, Steinbeck’s prostitutes always follow the laws of nature: they provide what man naturally needs. What changes is the nature of those needs and the atmosphere surrounding the prostitution. Steinbeck never judges his prostitutes, even when he shows their depravity and darkness, and the prostitutes, though they may at times be unhappy with their lives, never feel shame for their profession. He can’t judge them, because they are, at heart, his own self. He manipulates the prostitute characters to embody his own view of nature and to fit with his current ideals, omitting those parts which don’t comply with whatever view he wishes to present.

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THE PRENATAL USE OF CRACK COCAINE:
HOW IT AFFECTS CHILDREN AND HOW SCHOOLS CAN RESPOND

Michelle Kirkham

Each year it is estimated that 375,000 infants are born exposed to crack cocaine in utero, a figure which represents nearly eleven percent of all live births in the United States. And the numbers are on the rise (Jacques 1991). Crack cocaine first made its appearance on the streets of this country in the early 1980's. Since then, it has become known as the cheap way to get high fast. Crack, unlike any other drug, has been able to cross all socioeconomic boundaries. This means that the number of drug users has increased, in turn increasing the number of drug-related pregnancies.

Since the introduction of crack, cocaine has surpassed heroin as the leading drug of choice on the American streets (VanDyke 1990). As previously stated, this illicit drug knows no socioeconomic boundaries; however, the inner cities are seeing the most effects of this drug. Over thirty percent of the babies admitted to neonatal intensive care units in the inner cities are products of prenatal crack cocaine exposure (Finberg 1990). In Washington, D.C., alone, the infant mortality rate increased by forty percent in one year because of the increase in drug usage related to crack (Skolnick 1990). In the East Harlem and South Bronx sections of New York City, cocaine has become the number one drug used by women of child-bearing age (Bingol 1987). Over fifty-eight percent of pregnant drug users in the Chicago area have made cocaine their drug of choice (Williams, 1993). These figures are alarming, and even more alarming is that research indicates by the year 2000, sixty percent of all inner-city children will be born exposed to crack cocaine while in-utero (Sautter 1992). There is, however, more to this problem than rising numbers. Because crack is still new to the drug world, the effects are still being documented. Upon prenatally exposed children, there is evidence that crack impairs both physical and neurological development.

The March of Dimes Foundation predicts that by the year 2000 there will be four million crack-affected children within the American school system (Sautter 1992). The oldest crack children are now approaching school age. In order to help these children, researchers and the educational system have begun looking at the long-term effects of this substance upon these students’ school performance and placement. These professionals realize that the physical, social, and emotional impacts upon many of these children are enormous and will continue as such unless something is done to help them. Several school districts have established pilot programs to help the prenatally exposed children of crack before they reach school age. These pilot programs not only allow for early intervention but also establish strategies that the classroom teacher can incorporate in order to help these children reach their fullest potential.

Educators are not the only ones who are trying to find ways of helping crack-affected children. Communities have also become involved with forming programs that focus on prenatal and postnatal care for the mother and child. In addition, programs are being established to help the addicted mother and/or father stop the habit and to teach them how to take care of their child.

Crack Cocaine: How it Works

Crack, also known as rock or ice, is a smokable form of cocaine and also one of its most addictive forms. Some refer to it as the "free base" form of cocaine hydrochloride because it is removed or "freed" from the hydrochloride base (Levy 1991). Crack cocaine first noticeably
appeared on the United States market in 1983 (Stroud 1991). Yet, crude recipes for crack began to appear in media interviews, congressional testimonies, and underground literature in the 1970's (Witkin 1991). The name "crack" comes from the crackling sound the cocaine makes as it is heated. Since it is heat resistant, users can place flakes in pipes or on cigarettes to absorb the full impact of the drug into the lungs. The vapors of this powerful stimulant are absorbed through tissues and enter the brain within six seconds, producing an intensely quick euphoria. This "high" characteristic of crack lasts only five to seven minutes, unlike that generated by cocaine powder, which produces a high that lasts thirty minutes or longer (Levy 1991). Crack, therefore, has become the drug of choice because one does not have to wait so long to get the feelings of euphoria and the expense is minimal. According to one source, "What the fast food industry did for eating on the run, crack has done for cocaine" (Dye 1991). Crack is cheap, easy, and faster to use than any other form of cocaine, and the wanted response occurs in less time. But, the "down" comes as quickly as the "high," leaving the user severely depressed. This depression, in turn, makes the person crave more crack, setting up the vicious cycle of addiction.

Crack is not only more addictive than the other forms of cocaine; it is more potent. Cocaine powder is usually fifteen to twenty-five percent pure cocaine (Levy 1991). According the United States Drug Enforcement Administration (DEA), crack is currently seventy-five to ninety percent pure, an increase of thirty-four percent since 1987. It is estimated that there are currently 500,000 users of crack cocaine in the United States (Dye 1991).

Even more alarming is that in 1987, the National Cocaine Hotline estimated that one million Americans had tried crack (Witkin 1991); by 1990 that number had increased to three million Americans (Dye 1991).

The side effects of crack addiction are numerous. Researchers have found that crack users are highly susceptible to eye problems associated with the powerful smoke vapors. These include diseases such as infectious keratitis (inflammation of the cornea) and corneal epithelial (Sachs et al. 1993). Crack is also known to interfere with the performance of the heart and lungs. When the crack is inhaled, blood vessels constrict, an action which increases the chance of strokes and heart-attacks. Neurologically, crack is identified as a stimulate that has severe effects upon the central nervous system. Mood swings can be severe, and at times one will suffer from "cocaine bugs," which are actually neurological sensations and hallucinations on the skin which the user views as crawling bugs (Levy 1991).

Prenatal Crack Use and the Effects upon the Child

Prenatal crack use has major implications upon the health-care industry of the United States. In the state of California, it costs thirteen times more to care for a crack-exposed infant's delivery than a non-drug-exposed child, and the average stay is five times longer (Toufexis 1991). The national medical cost for cocaine-exposed infants in 1990 was over five hundred million dollars (Williams 1993). Many of these children will be abandoned at the hospital by their crack-addicted mothers for one reason or another. As many as fifty percent of newborns born prenatally exposed to crack do not leave the hospital with their mothers (Briggs 1990). Many mothers do not want the responsibility of motherhood, many are afraid that they will be arrested for delivering crack-addicted children, and many feel that they are doing the best possible thing for their children by leaving them.

The number of crack-exposed children in foster care has dramatically increased in the last decade. Before crack became prevalent
in the American society, statistics showed that seven hundred fifty drug-affected infants were annually placed in foster care. Today, the number is close to thirty-five hundred, which has raised the cost of caring for drug-affected foster children from three hundred twenty million dollars to seven hundred ninety-five million dollars in nine years (Toufexis 1991). These figures do not include the intense care that many of these children require physically, emotionally, socially, and academically to combat current and future problems which occur as the result of prenatal crack exposure. Many of these children will return to the hospital with physiological and/or neurological problems related to in-utero exposure and/or physical abuse by their "drugged-out" parents who did not stop using crack after the birth of their children.

Neglect and abandonment are common forms of child abuse seen with drug-addicted mothers who are out of the home for days looking for someone to give them a hit. Child abuse figures in New York City alone rose by seventy-two percent from 1985 to 1988 as a result of crack use by a caregiver (Williams 1993). And in some cases infants have overdosed on crack taken into their bodies through breast milk and passive smoke inhalation. Even more devastating is that many of these children will be born HIV positive. This is because many drug-addicted mothers turn to prostitution in order to get the money needed to support their habits.

Major physiological complications seen with prenatal cocaine exposure are birth defects, miscarriages, abruptio placentae, and premature births. Abruptio Placenta (separation of the placenta from the uterus) is a very serious condition that results in death to approximately thirty to sixty percent of neonates and ten percent of mothers (Williams 1993). Contrary to many beliefs, cocaine use in any trimester of fetal gestation can have serious effects upon the prenatal and postnatal development of the child. However, the first trimester is the most important in terms of the physical development of the fetus. During this stage, the major organs, tissues, and physical structure form. The presence of crack in the mother's body can cause blood vessels to constrict, thereby reducing the oxygen and nutrient flow to the fetus (Toufexis 1991). This, in turn, can cause malformations of limbs and organs and can lead to serious neurological impairments.

In a 1987 study, it was found that cocaine use by the pregnant mother increases stillbirths, causes a higher number of physical malformations, and decreases fetal weight (Van Dyke 1990). The use of cocaine during the later months of pregnancy can cause embolisms or blood clots to form and lodge into fetal vessels. Closing off blood, oxygen, and nutrients to an organ or limb can result in shriveled limbs and/or missing parts of intestines and kidneys. Crack also alters neurotransmitters within the central nervous system that send messages back and forth from the body to the brain (Toufexis 1991). This neurological alteration may explain the irritability, impulsiveness, and moodiness seen within many of these children after birth. Scherling also notes that the use of crack leads to more premature births and increases the number of infant deaths related to Sudden Infant Death Syndrome (Scherling 1994).

One may think that the problems are over at birth for prenatally crack-exposed children. This is not true. Although most exposed children have the same physical appearance of any healthy non-exposed newborn, there are many with neurological and developmental problems. Twenty-five to thirty-five percent are born with below-average weight and length and have head circumferences that are smaller than the average newborn (Scherling 1994). These problems are not very severe and in most cases do not cause prolonged problems for
Crack-exposed children. Sleeping disorders are also common in these children, and research shows that they are more susceptible to convulsions. The children have problems with visual tracking, can not pay attention, and are easily over stimulated (Waller 1993).

Crack-affected children also suffer from problems that seem to be neurologically related. One-third of prenatally exposed infants are born with lesions on the brain compared to five percent of newborns not prenatally exposed to crack cocaine. Studies of exposed infants during their first week after delivery show irritability of the central nervous system in the form of tremors and rigidity of muscles (Van Dyke 1990). At birth, many show poor results on tests that measure their responsiveness. At one month of age, some are not as responsive as a non-exposed infant of two days (Toufexis 1991). Studies at four months of age have found that forty percent of these children suffer from developmental motor dysfunction, frequent tremors, increased extensor muscle control, and primitive reflexes normally extinct by this age. At eight months, many stand on their toes, crawl more slowly than average, and possess more rigid extensions of the limbs.

Several studies have been performed upon prenatally crack-exposed infants to assess differences between their development and the development of their non-exposed peers. In a one-year study at the Beth Israel Medical Center in New York, researchers observed that infants of cocaine-addicted mothers were found
1. to be smaller than the average newborn,
2. to have unusual brain wave patterns,
3. to have short-term neurological signs such as irritability, and
4. to have poor interaction with caregivers.

Researchers documented that the children were delayed in learning to speak and were unable to separate the mother from a stranger. It was furthered discovered that over fifty percent of these children had impaired motor and social skills (Toufexis 1991).

Crack Effects Seen in Preschool and Elementary School Children

The majority of the prenatally crack-exposed children within the schools today look like any other children. They do not suffer from physical traits seen in many special-needs children with disorders such as Down’s Syndrome and Fetal Alcohol Syndrome. The problems are seen within the exposed children’s abilities to socially, academically, and personally interact within the environment. Most of these children have age-appropriate I.Q’s, but something is missing that allows them to be totally involved with their environment. Even at age two, children prenatally exposed to crack have the lowest scores on developmental tests that measure group interaction, concentration, and environmental control (Williams 1993).

Preschoolers prenatally exposed to crack cocaine are isolated from their peers as early as age three. Other children are fearful of their violent outburst and mood swings. Crack-exposed children, according to Waller, "do not feel remorse for hurting others, and they do not seem to develop conscience" (Waller 1993). Common characteristics seen within these children are hyperactivity, impulsiveness, unawareness of others, and an inability to attend for any period of time. They have no concept of symbolic or free play and do no comprehend relationships such as cause and effect. Toys are not picked up and played with for periods of time; instead, they are scattered about the room and repeatedly picked up and put down (Williams 1993). These children can and do accomplish tasks when they are directed, but
they can not organize their own experiences and activities (Waller 1993).

In a busy classroom, a child prenatally exposed to crack will react in one of two ways to the noise, excitement, and activity. He will either become completely withdrawn from the environment or he will go into a mood swing, during which he becomes aggressive and difficult to control (Rist, 1990). Several teachers report that these children are sometimes violent and impulsive and that school discipline does not seem to work.

Learning and memory problems are also seen with prenatally exposed children. And many times they are unable to set limits on their speech and behavior, often blurtling comments that are embarrassing or irritating to others (Waller 1993). These problems, in turn, make it harder for these children to make and maintain friendships. Another problem seen within crack-affected children is their inability to read nonverbal cues such as body language (Waller 1993). When the teacher shows an expression of approval or disapproval, it has no effect upon the student. Discipline is thus harder to enforce in the classroom for these students, and less praise is felt when the teacher smiles at a project the student is working upon.

The Educational System’s Response
In the late 1980’s educators began to realize that school systems were ill-equipped to handle crack-affected children and their needs. Several pilot programs were established across the country to find ways of helping these children succeed in the American Educational system. Educators hoped that these programs would give some insight into strategies that teachers could use in the classroom to help these children.

The Salvin Special Education Center Program in Los Angeles is one of the most widely known educational pilot programs for prenatally drug-exposed children in the country. It was established in 1987 by the Los Angeles Unified School District to serve cocaine-exposed children ages three to six. The main goal of this program is to insure developmentally appropriate teaching for each child. The program follows the guidelines set forth by the National Association for the Education of Young Children (Bellisimo 1990). Each classroom contains a maximum of eight students and three teachers. The classes are purposely small in size to allow for more individualized attention, although classroom activities, such as playing games and singing songs, are similar to what one would see in any classroom. Yet, this program goes a step further. It emphasizes fixed seating arrangements and consistent routines. Activities are favored over pencil and paper work, and loud noises or other disturbances are minimized in order to avoid overstimulation (Toufexis 1991).

The main difference of the Salvin Center is the persons that are employed at the center. The Salvin Center not only employs preschool teachers; it employs social workers, psychologists, speech-language pathologists, and pediatricians to meet the children’s special needs related to their prenatal exposure to cocaine (Kantrowitz 1990). From this program, pilot directors Vicky Ferranra and Carol Cole have formulated some basic suggestions on what works with crack-exposed children:
1. These children need environments and routines which are predictable.
2. They need environments which encourage self-directed exploration.
3. Crack-exposed children need extra time to change activities and/or prepare for new ones. They have a hard time coping with transitions.
4. Because many of the crack-affected children have problems bonding with caregivers, there needs to be stability and consistency within their routine. Therefore, the classroom staff
must be consistently stable and there must be a small pupil-to-teacher ratio.

5. The one essential to the crack-affected child having a successful school experience is interaction and support by the educators with the child’s parents. (Bellisimo 1990)

Over half of all children who have completed the Salvin program with special counseling and tutoring have been able to transfer into regular classrooms (Toufexis 1991).

The Sausalito School District serves children from four communities: Sausalito, the waterfront houseboat community, Fort Barry and Fort Baker military bases, and Marin City, which is home to federally funded subsidized public housing. The Sausalito School program began in 1990 at the suggestion of Superintendent Don Johnson. This suggestion was made after a county-sponsored report was released that found that sixty-eight percent of the single women in Marin County were delivering drug and alcohol exposed infants and that twenty-two percent were from Marin City. According to Johnson, "This is not a future problem. These children are in the schools now and they need our best efforts" (Bellisimo 1990).

The Sausalito program is directed toward at-risk children and their families within the Sausalito area. The program’s plan is to coordinate efforts of various organizations and professionals to reach out to these families. The program hopes eventually to become a clearing house of information regarding what works with these children and their families and hopes to ensure that their needs are being properly met (Bellisimo 1990).

As programs were forming on the West Coast, the East Coast also was also beginning to look at the needs of crack-affected children. Washington, D.C.’s, answer for these children was Project Daisy (Developmentally Appropriate Intervention Strategies for Young Children). This program was established in 1989 as a three-year longitudinal study that would conduct five-year follow-up studies to see if early intervention is beneficial. Project Daisy currently serves sixty children in fifteen classrooms across four Washington, D.C., schools in communities known for high usage of drugs. There is a ratio of ten non-exposed children to five prenatally crack-exposed children in each classroom. The twenty prenatally exposed children are selected using the Washington, D.C., General Hospital’s tracking system. Key features of this program are developmentally appropriate practices, the use of a support team, plug-in services, family partnerships, student choices, and district-wide faculty training.

The Yellow Brick Road Learning Center in West Palm Beach, Florida, is a pilot preschool program for developmentally delayed children in foster care or in the care of children’s services. Ninety percent of children between thirty months and five years are in the program because of parental cocaine use. The children and families are required to undergo extensive therapy and testing, and most children are found to have normal intelligence.

The direction of this program is to provide consistency and structure. Focus is placed upon activities such as sitting in chairs, cooperating in group activities, and forming lines. Children are reinforced each day for positive behavior. The positive behavior is based upon oral contracts between the children and the teachers. The children turn in tokens for rewards at the end of each day (Gregorchik 1992).

Teaching Strategies and Interventions

Most teachers realize that children learn in different ways and that sometimes one must search to find the best strategies to use with a particular child to help him reach his
potential. This is the same for a crack-exposed child. Each child is an individual case; what may work with one exposed child may not with another child. The first and most important step in working with this child is early intervention specific to the individual problems and needs. Teachers who work with a crack-exposed child in the classroom believe that if the child is identified by the age of two years, he will be mainstreamed. If intervention is begun at the kindergarten level, it is still possible to mainstream, but it may require a longer period of time (Waller 1993). Patience is the next step. One must have the patience to work with a child who at times will not acknowledge the teacher’s presence or will throw a tantrum when the teacher tries to move from one subject to another. Finally, the teacher must be persistent in time allocation and attitude. The classroom instructor may have to spend more time outside of class working on specific and individualized lesson plans for the exposed child who can not grasp learning in the same way as his classroom peers. The teacher must have persistence in his own attitude not to give up on himself or the child.

A teacher needs to be aware of the children exposed to cocaine that are entering his or her classroom. This is not only for the teacher’s benefit but also for the academic and social well being of the children themselves. Gregorchik (1992) has formulated a list of symptoms seen within these children:

1. drug use in the home,
2. frequent mood swings,
3. difficulty with remembering and carrying out multiple directions,
4. low persistence and tolerance levels
5. difficulty with fine and gross motor skills
6. inability to remain seated or control body movements,
7. and difficulty with concentration.

One must remember that all children will show these symptoms at some time, and also that not all exposed children will suffer from any or all of these symptoms.

There are three levels of intervention that classroom teachers can incorporate into their curricula. At the primary intervention level, the instructor can teach drug education in order to help break the cycle (Tyler 1992). This includes teaching the harmful effects of drugs upon the user. By focusing at the elementary level, teachers can involve their students with drug-resistance programs such as Just Say No and D.A.R.E (Drug Awareness and Resistance Education), which not only teach them that drugs are harmful but also try to build students’ self-esteem.

In the secondary level of intervention, teachers can make referrals for the child and his family. Sometimes the crack-exposed child needs to be referred to other specialists such as speech-language pathologists or physical therapists. At other times, the teacher can refer the drug-affected family to community programs that can help the struggling addicted parent kick the habit and the child to increase school performance. However, in many cases, referrals are made to child welfare services because of suspected physical neglect and abuse from the crack-addicted caregiver or caregivers.

Most educators will fall within the tertiary level of intervention. This is where one will work with the after-effects of drug exposure. In this level of intervention, educators will work to maximize language and learning potentials by working around the obstacles confronted by prenatal crack-exposure. One way in which to help these children overcome problems is to avoid labels. By placing the problems in front of the individuals, one pays more attention to the issues and not the children. When discussing children with other professionals and caregivers, one should try to refer to the students first and the problems last. Instead of saying that she has crack-children in her
classroom, one would observe that in her classroom she has children who have been exposed to crack cocaine.

Creativity is not the best practice with crack-exposed children. Yes, the teacher must be creative in ways of finding what works with these children; however, too much creativity and excitement in the classroom have negative effects upon the children exposed to crack. These children need stability and order in the classroom setting. Often, it is beneficial to repeat information to children of crack exposure several times since many of these children have problems processing information both through auditory and visual means (Tyler 1990). Something is wrong in these children's abilities to place information into storage and retrieval within their brains. A teacher must be willing to teach the same information over and over to the child. It helps to offer more time for response in order that the brain may properly process the information (Waller 1993). Also beneficial is to have low stimulation in the classroom. Many of these children can not cope with the colorful bulletin boards and pictures posted upon the walls. It literally drives many of them wild. When working one to one with these children of high stimulation, the teacher and/or therapist should also remember not to wear clothes that distract, such as multicolored outfits or busy design sweaters.

According to Tyler, the most effective intervention depends upon comprehensive and interdisciplinary care aimed at forming stable environments and positive interactions whenever possible (Tyler 1992). These children need stability and high structure in their lives. Teachers must realize that collaboration not only includes other professionals; it also includes the primary caregiver.

Community Response to the Growing Problem

Medical and educational professionals realize that the best place to stop crack addiction is with the pregnant mother. This begins with intensive health care for the mother and the unborn child. Drug-addicted pregnant women are many times very young, very scared, and very unaware of the impact their behavior has upon the unborn children. For example, many crack users think that cocaine shortens labor time and enhances the delivery (Skolnick 1990). This is not true. These infants are born with serious problems directly related to the cocaine used by the mother to ease her pregnancy and labor. Intensive prenatal education and care may not be the answer, but they are a starting point.

Studies show that if the pregnant woman receives intensive prenatal care, the pregnancy can go full term. Also, the infant is born healthy, and the mother is better equipped to handle her newborn baby (Randall 1991). In a study conducted by the Bellevue Hospital in New York City, thirty-five pregnant women known to be substance abusers were subjected to intense prenatal treatment. This comprehensive treatment included counseling and building self-motivation to become drug free. The results of their study were very positive. Researchers found that all women delivered live infants, only one was born prematurely, four infants had low birth weights, and Apgar scores were eight or higher in all but one infant. An even more hopeful finding was that all of the women in the study were able to keep their babies; six months later only three women had to give up their children because of substance abuse (Randall 1991).

Most addicted mothers are not as lucky as the ones that participated in the Bellevue Study. Eighty-seven percent of the drug treatment programs in New York City will not accept pregnant addicts, and they will
dismiss women once they find out about the pregnancy. The sad truth is the programs are afraid of being sued for liability that is pregnancy related (Randall 1991). These women are, in turn, sent back into the destructive environments that offer no hope for them or their unborn children.

It is estimated that thirty-one dollars in benefits is gained from every one dollar that is spent on preventive services (Miller 1992). These services include such things as drug education programs and appropriate prenatal and postnatal care. California has become the forerunner in providing preventive services for perinatal drug abusers. On September 30, 1990, the Perinatal Substance Abuse Services Act was passed by the California legislature. This law allows for comprehensive care and service of pregnant substance abusers at the local level. Furthermore, all information obtained during the prenatal period is confidential and can only be used for the purpose of healthcare. If a mother tests positive for crack or any other drug prior to delivery, this does not alone signify child abuse nor neglect. A positive toxicology does lead to a referral to Public Health so that the infant may be screened at birth. If the infant is drug positive, a needs assessment of the mother and child is performed and the results are sent to County Welfare if the child is at risk. Law enforcement is prohibited from receiving and acting on these reports as mandated in the Perinatal Substance Abuse Services Act (Miller 1992).

The Role of the Speech-Language Pathologist in Intervention

It is known that a large percentage of crack-exposed infants is prematurely born. Studies have shown that these infants are behind their full-term peers in academic, cognitive, and physical performances (Barrera et. al. 1990). Without intervention, these low-birthweight children will continue to show deficiencies in language, cognition, and perceptual motor skills. It is the role of the speech-language pathologist to assist these children in reaching their maximum potential in the areas previously mentioned.

Since the introduction of Public Law 99-457, the clientele list of the speech-language pathologist has expanded. This law mandates intervention services for the zero to three population who suffer from environmental and/or physical at-risk factors. There are four basic principles or guidelines that a speech-language pathologist uses to assess neonates in an intensive care unit:

1. perinatal and prenatal history,
2. oral motor movements of infant,
3. ability or inability of infant to maintain homeostasis,
4. and the surrounding hospital environment. (Miller 1992)

Perinatal history refers to any problems surrounding the actual birth, whereas the prenatal history refers to any physical problems before birth that the mother and/or fetus may encounter. Knowing the case history of the infant and birth mother is very important to the assessment process. Prenatal concerns may include viral infections, bleeding, previous miscarriages, and drug usage. There are many instances in which the mother may not say that crack was used during pregnancy. Therefore, it is important to compare the prenatal information with the perinatal and even postnatal information. Things to be aware of include the use of anaesthesia or forceps during the delivery, the position of the baby, presence of jaundice, lack of oxygen during and after birth, and in the case of many crack-affected children, an abnormal head size.

The post-natal information goes beyond the hospital setting. It is the role of the speech-language pathologist to be aware of changes in the client and to try to find the appropriate cause or causes. It is not the pathologist’s role to pass judgment or even
to make assumptions about the caregiver’s treatment of the child at home; yet, he or she is required by law to report suspected abuse and/or neglect based upon physical and/or verbal clues. Signs to be aware of with someone using crack include a runny nose, low weight for body type, complaints of exhaustion, headaches, insomnia, dilated pupils, visible racing pulse, and extreme mood swings (Sparks 1993).

Passive smoke from crack in the home can also have detrimental effects upon a child. It can lead to drowsiness and seizures (Randall 1992). Passive exposure can occur in two ways. First, someone in the home may be smoking cocaine. Second, a mother who is taking crack will pass it on to her child within forty-eight hours if she is breast feeding. It is important that the speech-language pathologist know if the crack-addicted mother is breast feeding or plans to breast feed.

Oral motor skills are very important in the actual production of speech sounds. Most infants have no problem mastering the oral muscles. The bite and suck reflexes usually disappear by the time the infant is five months of age. The gag reflex is reduced by seven months of age, and the root reflex disappears by three weeks. If any one of these reflexes persists beyond the designated time, then there are definite problems with oral motor abilities. A complete and extensive evaluation should be performed.

The ability to maintain homeostasis is the infant’s ability to respond and interact appropriately within an environment. This homeostasis includes such things as responding to the voice of a caregiver. The hospital environment is also very important. Factors that will adversely affect the neonate’s behavior include isolation from other babies and the sterility sometimes seen in nurseries. An infant is more relaxed and more eager to respond in a warm and caring environment than in a cold and sterile one.

After the speech-language pathologist determines that there is a need for intervention, he or she must then plan the intervention. Research has concluded that there are three basic principles that the speech-language pathologist must keep in mind when developing intervention strategies for children who either have or who are at risk for communicative and behavioral disorders and their primary caregivers (Theadore et al. 1990)

First, each child is an individual. Therefore, interventions should be different regardless of the disorder. Family needs should be included in the treatment efforts, but the strengths and weaknesses of the individual child need to guide the intervention process.

Natural settings are the second principle to remember. A person performs better in a setting that is natural, relaxed, and familiar. This is especially true for the crack-exposed infant or child who needs stability. More will be gained by the child and caregiver if the speech-language pathologist goes into his environment instead of taking him out of the familiarity and comfort of his own. The speech-language pathologist will also learn more about the caregiver/child interaction in a more natural environment such as the home or classroom.

The last principle to remember when one is planning intervention is to help the caregiver to become more responsive and child-centered. The speech-language pathologist should observe how the caregiver’s language changes as the child’s language and emotions develop. One should notice the effectiveness of the caregiver in comforting the child. If there are problems with the child’s reaction to the caregiver, this does not mean that the caregiver is not doing his or her job. A child exposed to drugs such as crack may not respond to the intonations that a non-exposed infant will respond to in the environment (Theadore et al. 1990).
The speech-language pathologist’s role has also increased in the school system. Because of public law 99-457 and other federal mandates, many states now require a speech-language pathologist in every school, and some states have school-based preschool programs that provide intervention services. Public law 99-457 includes provisions for family involvement under the Individualized Family Services Plan (IFSP). The speech-language pathologist places an emphasis not only upon the child but also the caregiver. The professional looks at the behavior of the infant or child alone and its behavior with the caregiver. Even though public law 99-457 emphasizes the inclusion of the family, the speech-language pathologist’s first professional concern should always be for the child and his or her best interests and needs.

The relationship between the infant and caregiver is very important in the development of speech and language during what Erikson referred to as the "trust versus mistrust" stage. It is during this early stage that the newborn learns to trust or mistrust the caregiver based upon interactions. Many times the crack-exposed baby shows difficulty in forming bonds with others. This is due, in part, to the neglect seen in homes where crack is used by one or both parents. If the infant is ignored or mistreated by the primary caregiver, problems may arise. The caregiver-infant interaction provides a model to the child. The child is taught to attend to a person, discriminate between the caregiver and other individuals, and use joint focus eye contact. These are some of the building blocks for the development of language and speech.

Shaffer has researched the outcome of relationships between the infant and caregiver, concluding that the child may be placed into one of three categories: "ambivalence," "avoidance," or "emptiness." The "ambivalent" infant needs and wants attention but is never satisfied with the attention that he receives. This is the child in school that the teacher wants to protect from the world. He has a low tolerance level of frustration and asks for help by whining or throwing tantrums. The "avoidance" baby does not want to interact with caregivers. He would rather be alone in his own security than take a chance on another person. This is the loner child in the classroom that many times is disliked by the teacher. He is more aggressive than the ambivalent child but also exhibits a low level of frustration. The "empty" child sees life and those in it as insignificant. This is the child who will show more physical and psychological signs of insecurity. He will at times seem depressed to the point where many may think that he is mentally disabled (Shaffer 1991).

The speech-language pathologist must remember to utilize the three R’s - remediation, redefinition, and reeducation - whenever appropriate when focusing upon intervention strategies(Theadore 1990). Remediation refers to helping the child to overcome or compensate for his or her delays. Redefinition focuses upon redefining the strengths and weaknesses of the child and offering useful strategies to the caregiver to help with the child’s progression. Reeducation is the process whereby parents are taught the most successful ways of helping their child overcome his or her problems (Theadore 1990).

With crack-exposed children who suffer from a wide array of language, cognitive, academic, and social disorders, the speech-language pathologist and the caregiver must realize that intervention is only beneficial if given time and space. The time is needed so that these children may progress and learn at a pace that is comfortable to them. The space is needed so that redefinitions of the children’s strong points and weak points can be made.
Conclusion

Crack cocaine is producing serious problems in today's society. Users of crack are not only hurting themselves but are many times endangering the lives of the unborn. Professionals must put aside their differences and work together in order to help the crack-addicted mother and child break the vicious cycle. Through knowledge there is power, but more is needed to help the addicted mother of an unborn child. Intervention with care and compassion instead of judgement and persecution should be the goal of all professionals working with the crack-addicted newborn and mother. Professionals in all fields need to collaborate in order to help the victims of crack cocaine. As the prenatally exposed children reach schoolage, it is especially important that the classroom teacher and speech-language pathologist work together to provide the most successful intervention for these children.

Because most of the prenatally crack-exposed children are still in elementary school, their long-term outcomes are not known. Early intervention with crack-exposed children who suffer from developmental problems is the best treatment that can be done thus far. There are no miracle drugs or cures, and the process may be long and tedious. The benefits are already being documented; yet, the outcomes are years from being conclusive. The hope of all professionals involved with prenatally exposed children is that through early detection and intervention these children will grow to be healthy and happy adults who lead normal, productive lives.

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CIRCADIAN RHYTHMS OF BRAIN GABA LEVELS IN THE COCKROACH, *LEUCOPHAEA MADERAE*
Jeanette Marie Gibson and Juli Martin McCay

**Introduction**

Organisms live in environments that exhibit cyclic fluctuations in light and temperature, variations that occur daily and throughout the year. Organisms have developed circadian systems or "biological clocks" that work to synchronize them with these cyclic environmental changes by altering such things as physiology, biochemistry, and/or behavior (Page, 1990). Biological clocks have been found in eukaryotic organisms studied and have been discovered to share three main characteristics. First, these clocks are based on endogenously generated, self-sustaining oscillations that have a period length close to, but not exactly, twenty-four hours. Second, these circadian pacemakers can be adaptively synchronized (i.e. entrained) with environmental patterns such as photoperiod (light/dark) cycles. Thirdly, the periodicity of the clock does not change with changes in temperature.

Because of apparent similarities that exist in the circadian systems of many different species, it has been possible to exploit simple invertebrate systems in order to gain insight into the organizational principles that underlie more complex circadian systems (Scharrer, 1987). The cockroach has proven to be a particularly good model for studying circadian systems, and consequently, more is known about its circadian organization than that of any other organism. The circadian system of the cockroach consists of four functionally defined elements (see Figure 1): two mutually-coupled pacemakers located in the optic lobes that generate the primary timing cue for rhythms, photoreceptors located in the compound eyes for transduction of light information used in entrainment, a coupling pathway that transmits information from the photoreceptor to the pacemaker, and another coupling pathway that transmits information from the pacemaker to the activities and mechanisms it controls. In the cockroach, the circadian system controls locomotor activity (Nishii-Uwo & Pittendrigh, 1968), retinal sensitivity to light (Wills, Page, & Colwell, 1985), eye cell morphology (Ferrell & Reitcheck, 1993), and cytochrome oxidase activity (Lavialle, Chabanet, & Dumortier, 1989). The pattern of locomotor activity is easy to detect and shows a distinct daily rhythm. In 1990, Colwell and Page showed that the optic lobe is a self-sustained circadian oscillator by removing the optic lobe from *Leucophaea maderae* and monitoring its activity with a suction electrode. The removed optic lobes exhibited spontaneous neural activity in tissue culture for three to five days while totally isolated from any sort of neural input, and that activity exhibited a circadian periodicity. Furthermore, it has been suggested that the output of the optic lobe oscillators is inhibitory in that the output inhibits activity from occurring at an inappropriate phase in the circadian cycle.

It is believed that the regulation of circadian systems involves biochemical substances. Since clock output is believed to be inhibitory, the predominant inhibitory neurotransmitter, gamma-aminobutyric acid (GABA), was chosen for this study. Inhibitory neurotransmitters act by damping or suppressing the firing of target neurons. Inhibitory neural networks "act as the brakes on the entire nervous system" by "preventing a runaway spree of excitatory neural firing" (Gottlieb, 1988). Thus, they help to control the responses of excitatory networks that assess information about the external environment in which an organism lives. GABA, a modified primary amino acid, has
been found in high levels in the brains of mammals and arthropods (Gottlieb, 1988). GABA is thought to be the main inhibitory neurotransmitter in many organisms and is the only inhibitory neurotransmitter known in some systems, such as that of crustaceans. In humans, impaired GABA transmission has been implicated in such neurological and psychological disorders as Huntington’s disease, epilepsy, Parkinson’s disease, Alzheimer’s disease, and alcoholism. Because GABA is so prevalent in the brains of such a wide variety of organisms and since it is considered to be one of the main inhibitory neurotransmitters, it is believed that GABA fluctuations may be involved in the mechanism whereby clocks regulate circadian rhythms of behavior, physiology, and biochemistry. The identification of a biochemical substance that varies on a circadian basis would be an important first step in trying to determine which cells regulate the circadian rhythm.

In studying a compound that is believed to affect or be affected by the circadian system, one must first establish whether or not that compound exhibits a daily rhythm in organisms acclimated to a 12-hour light/12-hour dark cycle (LD 12:12). If the compound does not exhibit a daily pattern, the compound does not affect or is not affected by the circadian system. If a daily rhythm is found to exist, the next step is to establish if the rhythm exhibited by the compound persists on a circadian basis—in the absence of entrainment cues (i.e. light/dark and temperature cycles). If it does, it can be said that the compound is involved in the circadian system of the animal.

When organisms are entrained to the LD cycle, the onset of light resets their clocks to a 24-hour period each day. However, when the organisms are subjected to total darkness (DD), their perception of a day, controlled by the circadian system, is not exactly 24 hours. In total darkness, the organisms’ perception of a particular time and activity will not correspond to ambient time as it does during the LD cycle. In fact, depending on the organism, activity will begin at either a slightly earlier or slightly later time each day that the organism is in total darkness. Thus, the activity levels, which are an indication of the organisms’ circadian systems, must be closely monitored. This is an important consideration for experimentation. When carrying out studies using DD conditions, one must perform tests at the organisms’ perceived time (circadian time: CT) and not necessarily at a set time on a 24-hour clock. If a test were carried out at 1800 hours under LD conditions, for example, that same test may have to occur at 1745 hours (i.e., CT 1800) under DD conditions, depending on the shift in onset of activity of the animals.

In this study, we measured GABA levels in the brains of a large African cockroach, *Leucophaea maderae*, in order to determine if daily and circadian rhythms of this inhibitory neurotransmitter exist. We completed this analysis using high performance liquid chromatography (HPLC) coupled with fluorometric detection.
FIGURE 1. Brain Schematic
A. Schematic model of the circadian timing system of *Leucophaea maderae*. There are two, bilaterally paired driving oscillators, each located in one of the optic lobes of the protocerebrum. Each has three output pathways. One controls a rhythm in electroretinogram (ERG) amplitude, a second regulates locomotor activity via a driven system in the midbrain, and a third couples the oscillator to its companion oscillator in the contralateral optic lobe. There are also two input pathways to each oscillator. In addition to the input from the contralateral optic lobe, there is also a light entrainment pathway from photoreceptors in the retina of the ipsilateral compound eye.

B. Schematic of the anterior of the cockroach CNS showing midbrain, the 3 regions of neuropil of the optic lobe (lamina, medulla, lobula), the optic nerve (ON), optic tract (OT), circumesophageal connectives (CEC), subesophageal ganglion (SEG), and the cervical connectives (CERV). Modified from (Page, 1990).

Materials and Methods

Subjects:
Adult male *Leucophaea maderae* were used in these experiments and were housed in photoperiod and temperature-controlled chambers. For the light/dark portion of the experiments, lights came on at 0600 hours and were extinguished at 1800 hours. For the circadian portion of the experiments, the animals were subjected to constant darkness.

Measurement of activity:
Small plastic running wheels similar to those found in hamster cages were used to record the activity levels of the roaches. Each time the wheel turned, magnets mounted on the wheel closed a reed switch connected to an Esterhine-Angus event recorder, thus producing a mark on a paper chart moving at a constant rate.
Removal and preparation of cockroach brains:
Under LD conditions, brains were removed at set times of day. For DD conditions, the times had to be adjusted since the circadian system has a period of slightly less than 24 hours, and activity patterns were shifted. To do the surgery, subjects were first flash frozen in -70°C petroleum ether to prevent as much trauma as possible and to immediately halt all biochemical processes. Next, the cuticle was removed from the anterior portion of the head, and both optic nerves were severed with iridectomy scissors. Finally, the brain was removed from the head with forceps and homogenized in methanol containing the surrogate standard, aminovaleric acid (AVA). Brains were stored in a -70°C freezer until analyses could be completed.

HPLC parameters:
- Machine used: Varian HPLC - Model 5000
- Flow rate: 1.5 mL/min
- Column: C18 reverse phase column, 22 cm x 4.6 mm, with 5 µm particles
- Mobile phase: Isocratic

Fluorometric detector parameters:
- Machines used: Shimadzu Spectrofluorophotometer Model RF-540
- Shimadzu Data Recorder - Model DR-3
- Emission wavelength: 355 nm
- Excitation wavelength: 440 nm
- Flow cell volume: 12 µL

Solution preparation:
- Mobile phase: 55% phosphate buffer (pH 2.8 using H3PO4), 45% acetonitrile
- OPA: 5.5 mg ortho-phthalaldehyde (OPA), 40 µL ethanethiol, 4 mL methanol
- Borate: 0.1 M boric acid solution (pH 10.5 using NaOH)

Standards: All standards were made with methanol and the stated concentrations of GABA and AVA.
- 0.2 µg/mL GABA: 4.5 µg/mL AVA
- 0.5 µg/mL GABA: 4.5 µg/mL AVA
- 1.0 µg/mL GABA: 4.5 µg/mL AVA

Standards were stored in a -70°C freezer until analyses could be completed.

Derivatization procedure:
10 µL of sample (brain or standard) was mixed with 50 µL of the borate solution. 100 µL of the OPA solution was added and allowed to react for 90 seconds before the reaction was halted with the addition of 100 µL of glacial acetic acid. This mixture was then injected into the HPLC as quickly as possible. Because the half-life of derivatized GABA is only eight minutes, the sooner the injection took place, the larger the peaks were on the chromatogram.

Aminovaleric acid (AVA) was chosen as the surrogate standard and was present in constant levels in both standard solutions and brain samples. AVA is a primary amino acid with similar chemical properties as GABA, but AVA does not naturally occur in the brain of Leucophaea maderae. Since GABA and AVA do not naturally fluoresce, all standards and brain samples had to be derivatized with ortho-phthalaldehyde (OPA), which reacts with primary amino acids to form highly fluorescent products. The reaction of OPA will occur with any primary amine group in the presence of a reducing agent (thiol) to yield a product (Hearn, 1991). This reaction with OPA, shown below, required a pH in the range of 9-10.5 and allowed for the detection of GABA and AVA levels present in the standards and brain samples using a spectrofluorometer.
Each day that samples were analyzed, the first run completed was a methanol blank. A series of three working standards of GABA and AVA were subsequently analyzed, and a standard curve was established using the three standards mentioned previously. The GABA versus AVA ratio of peak heights was plotted against GABA concentrations to formulate the standard curve. All standards were run in triplicate each day to establish accuracy and precision. Retention times for GABA and AVA were approximately 4.5 minutes and 6 minutes respectively.

After a standard curve was established, brain samples were analyzed. All brain samples were run in triplicate. From the chromatograms of the brain extracts, the GABA to AVA peak height ratio was calculated, and GABA levels were determined by means of the standard curve. To determine if the GABA peak in the chromatogram of a brain was truly representative of GABA levels and not of a mixture of substances, a brain sample was "spiked." Equal volumes of a brain sample and of the high standard (1.0 µg/mL GABA : 4.5 µg/mL AVA) were mixed, and this mixture was analyzed.

Brains were extracted at three-hour intervals over a 24-hour period, and GABA levels were determined for six brains from each time period in order to probe for the presence of a daily rhythm. After the presence of a daily rhythm was established, seven brains from light/dark adapted animals were extracted at 1200 hours and 1800 hours, the times at which GABA levels were highest and lowest respectively, and seven brains were extracted from animals subjected to total darkness (DD) at corresponding circadian times.

Activity levels of the cockroaches had to be monitored throughout the experiment using activity charts (see Figure 2). When the cockroaches were entrained to an LD cycle, onset of activity occurred when the lights were extinguished (1800 h), and activity ceased prior to the time when lights were turned on (0600 h). Brains could not be removed until the animals exhibited a predictable, consistent locomotor activity pattern, which indicated that the animals were entrained to the photoperiod cycle. Under circadian (DD) conditions, the animals were allowed to freerun, and the onset of activity occurred at earlier times each successive day. This was an indication of the animals' perception of 1800 h, the time lights would normally be extinguished (i.e. CT 1800). This shift in onset of activity required a shift in time of removal of the brains. Under DD conditions, brains were extracted on the second day after lights were turned off for animals which had previously exhibited a predictable activity rhythm.

Data were analyzed using two different statistical tests: Analysis of Variance (ANOVA) and Student-Newman-Keul's range test. In addition, standard deviations and standard errors were calculated.
FIGURE 2. Locomotor activity recording of two cockroaches. The first recording is from a cockroach maintained under LD conditions (12 hours light/12 hours dark cycle) at 25 ± 2° C, and the second recording is from a cockroach maintained under LD conditions for a time and subsequently subjected to DD conditions (total darkness) on the day indicated. For LD conditions, lights were turned on at 0600 hours and were extinguished at 1800 hours.
Results

Before using the HPLC for analysis, the optimal excitation and emission wavelengths had to be determined. An excitation wavelength of 355 nm was chosen. The optimal emission wavelength was determined by doing a scan of all wavelengths and occurred at 440 nm (see Figure 3). This represented the peak in which GABA fluorescence was highest and methanol fluorescence was lowest. Since methanol was present in all standards and brain dilutions, it was important to choose a wavelength in which its fluorescence would not interfere with GABA fluorescence.

The first run each day was a methanol blank (see Figure 4). After the initial peaks, the baseline became stable and no other peaks were present. A sample standard chromatogram with known values of GABA and AVA (0.5 µg/mL GABA : 4.5 µg/mL AVA) is shown in Figure 5. After the initial peaks, two other major peaks were noted: a peak at approximately 4.5 minutes (GABA) and a peak at about 6 minutes (AVA). Three standards were used throughout the experiment, and a standard curve was established (see Figure 6).

A sample chromatogram of a brain extract is shown in Figure 7. Although there were other peaks present, the characteristic GABA and AVA peaks occurred at the expected times and could be analyzed. In order to determine whether or not GABA produced the characteristic peak at approximately 4.5 minutes, a "spike test" was performed. The resulting chromatogram revealed that the GABA peak was increased, yet no shoulders or hidden peaks were noted, indicating that the GABA peak was representative of true GABA levels.

After analyzing all brains from each time interval, a daily pattern of GABA was detected (Table I and Figure 8). GABA levels were found to be highest at 1200 hours and lowest at 1800 hours. Once the daily pattern of GABA was detected, more brains were removed at 1200 hours and 1800 hours from light/dark adapted roaches and from animals kept in total darkness. It was determined that the rhythm was circadian in that it persisted under constant dark conditions (Table II and Figure 9). Brain GABA levels at circadian time 1200 were higher and similar to levels at 1200 hours under light/dark conditions, and levels at circadian time 1800 were lower and similar to levels at 1800 hours under light/dark conditions. In addition, GABA levels at circadian time 1800 and 1800 hours under light/dark conditions were significantly lower than GABA levels at circadian time 1200 and 1200 hours under light/dark conditions.

![FIGURE 3. Preliminary scan to determine optimal emission wavelength to use in detecting GABA. Since GABA and methanol occur in all brain samples and standards, the optimal wavelength is represented by the peak in which GABA relative fluorescence is highest and methanol relative fluorescence is lowest. An emission wavelength of 440 nm was chosen to use for the fluorometric detection of GABA.](image-url)
FIGURE 4. Chromatogram of a methanol blank. Some initial peaks are consistently present, but by four to six minutes, which is the region of GABA and AVA detection, the baseline becomes consistent.

FIGURE 5. (Top of the next column.) Chromatogram of a 0.5 μg/mL GABA : 4.5 μg/mL AVA standard. Initial peaks are still present. The GABA peak occurs at approximately 4.5 minutes, and the AVA peak occurs at approximately 5.5 minutes. The height of a peak represents its relative fluorescence and is proportional to the concentration of the substance producing the peak.

FIGURE 6. (Bottom of the next column.) Standard curve used in calculating the levels of GABA in brain samples. The x-axis indicates micrograms of GABA present and is based on average values obtained for three standards. The y-axis represents the GABA to AVA ratio of peak heights measured in millimeters (± 0.01 mm). To determine the levels of GABA present in a brain sample, the ratio of GABA to AVA peak heights was calculated. The x-coordinate of the point of intersection of the GABA to AVA ratio with the standard curve line represents the GABA levels present in the brain.
FIGURE 7. Chromatogram of an LD brain removed at 0600 h (0600-8). Many more peaks are present in this chromatogram than in those for the methanol blank and standards, but GABA and AVA peaks still occur at their expected times without apparent interference from other peaks. The ratio of peak heights of GABA to AVA can be used to determine the micrograms of GABA present in the brain sample.

FIGURE 8. Daily Pattern of Brain GABA Levels. The bar above the x-axis indicates the hours of light (unshaded) and dark (shaded) conditions. GABA levels were found to be highest at 1200 hours and lowest at 1800 hours.

FIGURE 9. Brain GABA levels determined during times of high and low levels under LD and DD conditions. A difference was noted in GABA levels at 1200 hours and 1800 hours in cockroaches acclimated to a LD cycle similar to that in the previous experiment. This difference in GABA levels persisted for two days in animals subjected to DD conditions at circadian times 1200 and 1800 hours. (See below.)
TABLE I. Brain GABA levels determined for six roaches at each three-hour interval over a 24-hour time period.

<table>
<thead>
<tr>
<th>TIME (h)</th>
<th>GABA LEVELS (ng/brain)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0300</td>
<td>635 ± 25(^b)</td>
</tr>
<tr>
<td>0600</td>
<td>554 ± 93(^a)</td>
</tr>
<tr>
<td>0900</td>
<td>564 ±42(^b)</td>
</tr>
<tr>
<td>1200</td>
<td>896 ± 36(^a)</td>
</tr>
<tr>
<td>1500</td>
<td>595 ± 52(^b)</td>
</tr>
<tr>
<td>1800</td>
<td>544 ± 13(^b)</td>
</tr>
<tr>
<td>2100</td>
<td>689 ± 71(^c)</td>
</tr>
<tr>
<td>2400</td>
<td>634 ± 31(^c)</td>
</tr>
</tbody>
</table>

\(^1\) Values reported are mean values ± one standard error.

\(^2\) Values with different letters are significantly different at the 95% confidence level as determined by analysis of variance (ANOVA) and Student-Newman-Keuls range test (SNK). \(P \leq 0.05\).

TABLE II. Brain GABA levels determined at 1200 h and 1800 h in seven roaches acclimated to a LD 12:12 (LD) photoperiod schedule or during the second day of constant darkness (DD) at circadian times 1200 h and 1800 h.

<table>
<thead>
<tr>
<th>PHOTOPERIOD/TIME</th>
<th>GABA LEVELS (ng/brain)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD 1200</td>
<td>1073 ± 63(^b)</td>
</tr>
<tr>
<td>LD 1800</td>
<td>706 ± 27(^a)</td>
</tr>
<tr>
<td>DD 1200</td>
<td>994 ± 42(^a)</td>
</tr>
<tr>
<td>DD 1800</td>
<td>681 ± 36(^a)</td>
</tr>
</tbody>
</table>

\(^1\) Values reported are mean values ± one standard error.

\(^2\) Values with different letters are significantly different at the 95% confidence level as determined by analysis of variance (ANOVA) and Student-Newman-Keuls range test (SNK). \(P \leq 0.05\).

Discussion

In this study, a daily pattern of GABA levels was detected with highest GABA levels at 1200 hours and lowest levels at 1800 hours. Levels at 1800 hours were similar to levels at other times of day, but 1800 hours was chosen for the circadian study since data from the LD portion of the experiment had the least standard deviation at this time of day. The fact that GABA levels were highest at a time of day of low activity (1200 h) corresponds with the fact that GABA is inhibitory. Prior to this study, GABA levels had not been determined in Leucophaea maderae. GABA levels have been determined in honeybees and other insects and spiders at one time of day on various days of development (Fuchs, Dustmann, Stadler, & Schurmann, 1989), but to our knowledge, no one has ever tested levels of GABA around the clock to see if daily and circadian rhythms exist for this inhibitory neurotransmitter. Other studies measured GABA levels in micrograms of GABA per gram of protein, while measurements of this study were in micrograms of GABA per brain; since protein levels may also vary on a circadian basis, results from this study could not be
compared with previous insect studies on GABA. However, it is encouraging to note that the overall average GABA levels obtained were comparable to values obtained in a study done on mouse brain cortex using HPLC (Kapetanovic, Yonekawa, & Kupferberg, 1987).

When tests were carried out under constant environmental conditions, the difference in GABA levels persisted on a circadian basis, indicating that GABA is involved in the circadian system of Leucophaea maderae. Studies using electroretinogram (ERG) have shown that the sensitivity of the compound eye to light exhibits circadian variation and that the highest off-transient peak amplitude occurs during the "subjective day" (i.e., circadian times of day 0600 h - 1800 h) (Wills, Page, & Colwell, 1986). Off-transient peak amplitude changes are regulated by the optic lobe pacemaker, which is suspected of generating inhibitory output. Since its levels of highest output occur during the animal's perceived daylight hours under circadian conditions, results from this study are further corroborated since GABA levels were found to be highest at 1200 hours circadian time.

Through this research, the daily pattern of GABA in the brains of Leucophaea maderae was discovered, and this rhythm was determined to exist on a circadian basis. The implications of this study are widespread. Now that GABA has been found to be involved in the circadian system, further research can be conducted to determine if only one cell type determines the rhythm or if many different types of cells that interact are involved. In addition, research could be conducted with glutamic acid, an excitatory neurotransmitter and precursor to GABA, to determine whether or not these two compounds work in conjunction to control the circadian system.

The circadian system of the brain of the cockroach (Figure 1) is very analogous to that in humans and other vertebrates. In fact, GABA has been found to be present in high levels in areas of the vertebrate brain known to be associated with the circadian system. For instance, Moore and Speh found in 1993 that GABA is the principal neurotransmitter found in the rat's intergeniculate leaflet and suprachiasmatic nucleus, two regions of the mammalian central nervous system known to be a part of the circadian system. Once the circadian system and its mechanisms are mapped out, humans could benefit: the symptoms of jet lag or depression associated with seasonal changes might be eased, and the optimal times of day to administer prescription drugs might be determined. Also, since impaired GABA transmission has been implicated in certain neurological and psychological disorders (Gottlieb, 1988), the more that is understood about this neurotransmitter, the closer we are to understanding ailments as diverse as epilepsy, Alzheimer's disease, and alcoholism.

Bibliography


HOME-SCHOOLING AND KERA: COMPARISON OF THEMES AND DEVELOPMENT
Dana Patterson

Introduction
Dissatisfaction with the public schools has prompted a growing number of parents to teach their children at home. Despite the fact that public education and home-schooling have a common purpose—to educate our nation’s children in the best way possible—the groups are isolated in their efforts. And yet, ironically, by working separately the two have developed many of the same ideas, goals, and methods, although no comparative study of the two has been made until now.

In 1989, in Rose v. Council for Better Education, Inc., Ky 790 S.W.2d 186, the Kentucky Supreme Court declared that the Commonwealth did not have an efficient system of public common schools as guaranteed by Section 183 of the Kentucky Constitution (Harvey 2). At the same time, the Kentucky Supreme Court directed the General Assembly to reestablish education in the state. It said an “efficient system” of common schools that would address curriculum goals” must be built in order to provide an “adequate” education for all children. The recommendations of the Council on School Performance Standards ordered by Governor Wallace G. Wilkinson were used to create the Kentucky Education Reform Act of 1990 (KERA), also known as House Bill 940, with its six learning goals and seventy-five “valued outcomes” (The Council iv). The goals include 1) Basic Communication and Math Skills, 2) Core Concepts and Principles, 3) Self-Sufficiency, 4) Responsible Group Membership, 5) Thinking and Problem Solving, and 6) Integrating Knowledge. The outcomes under each goal were renamed “learner outcomes” and eventually “academic expectations.” Goals 3 and 4 are included in the Kentucky statute as “learning goals,” but as of the summer of 1994 they are not included in the state’s academic assessment program. There are currently fifty-seven learner outcomes, as opposed to the original seventy-five. However, teachers are still urged to include the ideas behind Goals 3 and 4 in their curricula.

More than 830 residents of Kentucky were contacted by the Council on School Performance Standards and asked to express their opinions about what should be expected of the graduates of the year 2000 (The Council on School 3). The Council appropriately reasoned that the themes of KERA should echo the underlying thoughts of the citizens of the state; that is, KERA should provide students with the knowledge and resources to function in our evolving society. Believing that all students can learn at high levels if taught appropriately, the Council developed a means to implement the idea of education reform (Roberts & Kay Inc. 1). As a consulting firm observed,

Some teachers and administrators report changes in the way they view learning, as a result of the performance testing KERA requires. Some say they see learning more now as something children generate, instead of just a demonstration through objective tests of knowledge of facts and ideas that others have generated. (Roberts & Kay, Inc. 6)

A system that is parallel with KERA in its development and themes is the movement of home-schooling. Most people who study home-schooling agree that the numbers have grown dramatically in the last twenty years (Natale 26-27). Sources vary in their specific numbers, but the increase has been in the thousands. Patricia Lines, who
completed research for the U.S. Department of Education in 1992, concluded that the numbers were 250,000 to 350,000, whereas twenty years before they were 10,000 to 15,000 (27).

Home-schooling began to increase significantly around the 1960s and 1970s when the shortcomings of the public education system were pointed out by education reformers (Knowles 195). There is no specific stereotype of these parents, for they are a mix of extreme liberals and conservatives (197). What they do have in common is that they want their students to become responsible, self-sufficient individuals. And interestingly, these parents focus both on affective education as well as academic education, just as KERA does.

**Literature Review**

Many materials are available on home-schooling. Information on KERA, however, is comparatively scanty because the legislation is still new. The Kentucky Department of Education does send the KERA goals and outcomes to prospective home-school parents, but it informs parents that home-school families are not required to abide by KERA’s six goals (Kentucky Dept. of Ed. 7). What, then, do the two have in common? Because there is no source which compares home-schooling and KERA, components of the two must be reviewed simultaneously.

Home-schoolers were some of the first educators to use real-life application in their teachings. A pamphlet on home-schooling by Sam B. Peavey, Ed.D., states that for years a common practice in home-schooling was to spend fewer hours actually working on a subject than putting the knowledge to use in the real world, which was right at the students’ fingertips (12-13). He says students from this lifestyle have a much more authentic relationship with the community and its opportunities and demands. After spending just a few short hours on instruction, the students can devote time to “individual projects, field trips, art, music, libraries, museums, educational television, volunteer work in community agencies, sharing family responsibilities, hobbies,” and small money-making jobs such as crafts, gardening, lawn care, etc. (Peavey 13).

Individuals who have been home-school parents or students echo the claims of Peavey. In an article in *The Christian Educator*, Robert B. Farmer, a former home-schooled student, notes the importance of applied knowledge as well as “retained” knowledge in education. His most valuable lesson from home-schooling was that real-life applications rather than memorization made knowledge much easier to retain (Farmer 1). The Colfax family in California home-schooled their four sons, three of whom were accepted at Harvard. The parents allowed the boys to develop their own interests on the farm and pursue them with real-life applications. Most of the boys were interested in biology because of their hands-on experience with its processes in working with the animals (Films for the Humanities and Sciences). Kathleen McCurdy, the Executive Director of the Family Learning Organization in Spokane, WA, in 1988, has said that knowledge “is an organized collection of meaningful facts” that are not memorized from textbooks, but through experience (Hegener 36).

In an interview, Mrs. Stephen Stovall, a home-school parent, has indicated that her daughter learned much more about real-life by being home-schooled: “She [her daughter] was learning so much about life and death and a lot of neat things she could never have learned from a book.” Agreeing that there must be books for math and literature, Stovall also claims that her daughter applied knowledge in a much more authentic manner while being home-schooled (Stovall).
The importance of real-life application was also recognized by the creators of KERA. In *Kentuckians’ Expectations of Children’s Learning: The Significance for Reform*, authors report that some teachers and administrators now view learning in a different way thanks to the use of KERA’s performance-testing requirements. Students can learn on their own and create their own meaning. Tests which assess the ability to apply knowledge are given rather than those which include multiple choice, true or false, or matching. (Roberts & Kay, Inc. 6)

In *Kentucky’s Learning Goals and Valued Outcomes: Technical Report* examples of the inclusion of real-life application can be found. In writing the original six learning goals, the authors decided the following:

While there was plenty of support for learning basic communication and math skills, the most important learning outcome identified was that students should be able to use their skills and knowledge in mathematics, science, social studies, and other disciplines in situations similar to what they will experience in the real world. (The Council 3)

The contributors said that students should learn to become responsible members of a family, work group, and community as part of their school learning experience (3). Consequently, a subdivision of Goal 2 requires that students demonstrate positive skills in family life and parenting. The contention is that students who are aware of these skills can maintain better relationships with families and groups and are better able to successfully manage their responsibilities as the world and their lives change (The Council 87). Under the science part of Goal 2, real-life application and hands-on experience are required for student understanding and knowledge (48). Since real-life application is an underlying theme of KERA, the testing procedures echo this philosophy also. The new assessment plan is to move away from the multiple-choice test, which requires teachers to “teach to the test” for the acquisition of knowledge, to a test which has teachers convey the use of knowledge to their students. One example included in KERA is the Kentucky Instructional Results Informational System (KIRIS), which contains performance tasks and open-ended questions. On real-life experiences, the performance tasks are based. Open-ended questions involve the four content areas of mathematics, science, reading, and social studies. More teachers are now beginning to use what is termed a rubric. It is made up of four levels of achievement and the expectations under each level. A teacher assesses a child’s product or performance according to these predetermined criteria. The hope in using authentic assessment is to accurately measure the students’ abilities to apply knowledge they have learned (132-133).

Another aspect of both home-schooling and the themes underlying KERA is independence of the student. Peavey says that “most home school programs are uniquely designed and conducted with a stress on independent study, individual responsibility, self-evaluation and the use of diverse resources” (Peavey 11). In the case of the Colfax family, independent study was the major component of their home-school. The boys spent their time researching their own topics and reading novels in order to find the answers to their questions. Once the topics moved out of the parents’ knowledge base, the boys discovered the material and answers on their own (Films for the Humanities and Sciences). Robert B. Farmer confirms this in his article in *The Christian Educator*. He says that “the nature of the home schooling encourages intellectual independence. This independence led me
Farmer] to realize the importance of analytical reasoning” (Farmer 1).

Stovall also endorses independent study as being a major component of a home-schooled student’s education. Her claim about her daughter is that “it really helped her not be so worried about being different.” Peer pressure was not a great part of her daughter’s life as in the public school. However, Heather, her daughter, seemed to fit in with her peers quite well (Stovall).

According to an article by Susannah Sheffer in American School Board Journal in 1989, home-schooled students can read independently for long periods of time. She also observes that home education provides a good example of how children can “teach” themselves (Sheffer 34). Mark and Helen Hegener emphasize the point that home-schooled children learn the value of continued effort much better than public school children (Hegener 24). John Wesley Taylor from Andrews University has used a self-concept test on a sampling of home-schooled children and conventionally schooled children. His study, primarily done in response to claims that home-schooled children were socially deprived in being required to be more independent, finds that the home-schooled group scores higher than the conventionally schooled group. He concludes that few home-schooled children are socially deprived (Rakestraw 74).

Independence is a major theme of KERA and its goals. In addition to wanting real-life application, the contributors to the writing of KERA believe that “students should develop personal attributes such as self-sufficiency, self-confidence, and adaptability” (The Council 3). Goal 3 is dedicated to such self-sufficiency. When writing the outcome of “Positive Self-Concept,” the authors wanted students to recognize their own strengths and use them to shape their own futures (103). If students apply the outcome of “Adaptability and Flexibility,” they will be able to adapt on their own to changing events and ideas (105).

Under the fifth outcome students were to demonstrate self-control and self-discipline. They were also to set realistic goals, manage their own time, and work toward these goals while evaluating their progress by monitoring and accepting responsibility for their own behavior (The Council 107). Another appropriate outcome, number seven, was titled by some as “Independent Learning.” The students were encouraged to identify their interests and needs and set learning goals to meet these needs. In addition, this outcome stated that the students were to evaluate their own progress toward these goals based upon internal and external evidence from others (107).

The Council on School Performance Standards claims that “instructional programs that use portfolios as a means for students to present and keep a record of their work enable students to make individual choices about learning to take more responsibility for their own learning” (The Council 138). Although portfolios are not required in a home-school in the state of Kentucky, homeschool parents are encouraged to keep one for each child under instruction (Kentucky Dept. of Ed. 2). KERA places high importance on the portfolio, which is soon to be required in every basic subject. According to the writers of KERA, “assessment of writing as a valued outcome requires more than a multiple-choice test of knowledge” (The Council 5). The task is to have students place samples of products or recorded presentations into a student portfolio over a long period of time, while choosing to keep the best for assessment at the end. The main components of the items are writing and reflection (24).

Susannah Sheffer asserts that home-schooled children are pioneers in the use of student portfolios as an evaluation tool. Many parents adopted the method after the National Association of Elementary School
Principals recommended it along with a wide range of assessments for children’s progress. The advantage for home-schooling parents was the ability to follow a child’s progress over years. (Sheffer 35)

Although not done on a large scale, vertical age grouping is done in both the home and in Kentucky public schools. Susannah Sheffer again argues that homeschoolers are the originators of this idea. In many such families, older and younger children learn from each other and learn to work together (Sheffer 34). Schools have experimented with age grouping in the past by using a couple of years’ difference, whereas home-schoolers take it even further by applying parents and much older or younger siblings to this scenario (35).

"Interpersonal Relationships" was a former outcome under Goal 4 which required students to observe, analyze, and interpret human behaviors. By doing so, the students were better able to understand self, others, and human relationships. In reaching this outcome, students were to become responsible group members by working with a variety of people (The Council 73).

Another component of KERA with which most people are familiar is the ungraded primary program. In this program, kindergarten through third-grade students work together in a planned atmosphere to learn. The students are not singled out by their ability. Rather, they work together to learn from one another, with each performing jobs he or she is able to do. Multi-age, multi-ability classrooms, as well as continuous progress and positive parental involvement, are the major components of the ungraded primary.

Curriculum, especially integration of subjects, is a similarity between KERA and home-schooling. According to KERA’s Goal 1, students should be able to “comprehend, synthesize, and apply information from a variety of sources” (The Council 29). Goal 1 requires students to apply basic communication and math skills in situations similar to what they will experience in life (3). Teachers, under the new plan of KERA, are to teach by thematic units. This process integrates lessons from each subject area into interesting topics for the students.

In The Home School Reader, Mark and Helen Hegener advocate the unit approach to a curriculum. According to home-schoolers Lee and Phil Gonet, it is the most motivating way to get kids interested in learning. For example, the Gonets did a unit on dinosaurs and later found their children playing, using the knowledge they had acquired in their schooling (39-41). The Hegeners claim that having students read all types of material, including recipes, newspapers, and things in which the students are interested, will encourage reading in all topics of instruction (44). In order to incorporate writing, parents are urged to include it in different forms and in all subjects (99-101). The Hegeners also encourage parents to take topics which the children are interested in and then integrate such topics into an overall curriculum (66-69). Stovall, a home-school parent, integrates subjects into a common theme such as the Civil War. She incorporates literature and history in order for the student to get an overall picture of how things were in the time period being studied (Stovall).

Donn Reed, the author of The Home School Source Book, writes several pages about structure in a home-school. He agrees with Ten Wade on the statement that “free time and exploring are important,” but it is also important to work from a plan and to decide on the basis of goals rather than what seems to be fun at the moment (Reed 35).

Reed explains how reading, writing, spelling, math, history, and cultural diversity can be incorporated and somewhat integrated. Spelling, he says, should not be taught as a distinct skill, but integrated with writing and reading as the kids encounter different words. “Reading, writing, and
spelling (and even talking) are so closely related that trying to separate them is impractical and nearly impossible" (52). Taught as levels, mathematics should also be taught as it applies to real life and to other subjects. Sometimes students learn more in unstructured math (58-59). History also must be approached through different means such as music, gender differences, etc., an approach which in turn teaches cultural diversity integrated with history. In a way, Reed is essentially saying that subjects should be taught in thematic units in order to get the best effect, which is what the same idea is termed in KERA (66).

Results

Most sources agree that real-life application is important to the development of knowledge. In using the information he or she has acquired in situations which require analyzing, reasoning, and deciding, a student can develop the ability to apply this information to life. Indeed, people are more satisfied when they make decisions based on knowledge. Because teachers and administrators have learned that objective tests do not accurately measure what a person knows and can do, tests are beginning to move in the direction of performance rather than tests over memorized facts.

The common sense of performance testing and real-life application can be seen. Adults always remember experiences better than facts learned years before in school. Granted, schools and officials like to use results based on research and surveys in order to make decisions. But the idea of real-life application seems not only easy but natural. Real-life application is easier in the home because everyday items and events are immediately on hand. The home-schooled child can learn how to apply information to situations as a natural part of the school environment.

Independent study also lends itself to implementation in the home-school environment. Not only does it happen naturally, but some home-school parents see independent study as a way for their child to develop his/her own interests and motivation. Another reason would be that in some cases the child sooner or later passes the parent in academic level and has to pursue topics independently. In either case, the situation cultivates an individual who can research and learn without information being handed to him/her by a teacher or parent. An "approach that is flexible, provides a considerable amount of autonomy, and encourages intrinsic motivation in children" fosters an independent student (Williams, Creativity 5). In other words, the student can learn for learning's sake.

Public schools in Kentucky have also taken the step toward more independent study. Educators want students to think on their own and develop ways of solving problems on their own. KERA provides a way for teachers to help students do this. Parts of KERA focus on self-confidence, self-discipline, self-control, self-sufficiency, and adaptability. One section was originally devoted to independent learning. Students learn how to develop their own strengths and to manage their time in order to achieve goals they have set for themselves. Teachers also want students in this atmosphere to learn for learning's sake.

Portfolios can individually provide evidence of independent learning and thinking. The ability to monitor progress over years of study is an advantage the home-school had over public school in the past. A portfolio was established in a home-school simply by keeping the best work a child completed as a record of his/her progress. Over the years the portfolio became more complex and organized. It
became a way for home-school parents to show their child’s progress to the public school system. It has also been submitted to universities by home-school parents rather than their child’s grades or courses taken through high school (Films for the Humanities and Sciences). Although the home-schoolers pioneered the idea of a portfolio, KERA has sparked its arrival in the public schools.

A portfolio now has a more concise definition and series of expectations attached to it: A portfolio is a purposeful collection of student work that exhibits the student’s efforts, progress, and achievements in one or more areas. The collection must include student participation in selecting contents, the criteria for selection, the criteria for judging merit, and evidence of student self-reflection. (Paulson 60)

KERA puts emphasis on the portfolio, which is soon to be included in every subject. It encourages students to take charge of their own learning by becoming independent, self-directed learners (Paulson 61, 63). The portfolio helps students to develop writing skills, integrate subjects, and hone analyzing and decision-making skills. The samples of products placed in a portfolio aid teachers and officials in determining the progress of the child, whether in home-school or public school.

Vertical age grouping naturally happens when students of differing ages are being taught by one person, a situation which is the consequence of home-schooling. Home-schoolers may not be pioneers of the terminology “vertical age grouping” or the idea, as Susannah Sheffer claims (Sheffer 35), but they certainly seem to have made it work. Students in an environment with others who are older or younger seem to learn by modeling or by teaching. These students also learn how to work together as they will in real-life situations.

Of course, KERA also places an emphasis on interpersonal relationships and understanding others. The idea is that students become responsible community members when they learn to work with a variety of people. “Research documenting the benefits of mixed-age and mixed-ability grouping was a ‘driving force’ behind the reform legislation in Kentucky,” says Linda F. Hagan, an associate commissioner in the Education Department’s bureau of instruction (Cohen 1).

The ungraded primary contributes to this idea. Fortune magazine has provided a definition in an article on school reform: “Recognizing that children learn at different speeds, the law requires all elementary schools to abolish grades one through three and replace them with classes in which pupils are grouped according to educational progress not age” (Henkoff 139). This definition seems a bit crude, but it provides a skeleton to understanding the ungraded primary. Much more work goes into the program in order to give students the best possible education based on their own progress and abilities, not what everybody else in their age bracket is doing.

Perhaps seeming obvious, home-schooling and KERA have again implemented a common idea, integration of subjects. Some home-school programs have been carried out by organized schedules providing a set time for each subject. More than a few have begun to integrate the subjects. The parents have seen the similarities in language development, reading, and writing and combined the subjects. Some have also combined math and science. Every subject can be combined with another through some avenue. This integration provides students with a way to link ideas and put them to use. When students are allowed to pursue their own
interests, they develop a theme into which they can include aspects of each subject.

KERA has taken the idea of integration of subjects into a theme and developed a plan around it as well. Themes are a way to get students interested in the different subjects and to see how everything can be linked together. KERA requires students to comprehend and synthesize. In order for students to learn these skills, subjects are integrated to start them on their way to higher level thinking.

The two systems seem to have so much in common in their ideas and implementation. One may wonder why the home-schoolers continue to choose home-schooling if their ideas are taking hold in the public schools as well.

**Discussion**

Information is the key to understanding. Understanding of KERA from the home-schoolers' point of view has not occurred. An article in the September 1994 issue of *Kentucky Living* attempts to examine this problem, emphasizing that the excitement over KERA in the beginning has been transformed into concerns and questions from parents, teachers, and administrators (Luhr 23). Brad Hughes, a spokesman for the Kentucky School Boards Association, has said, "People are confused and in many ways afraid because they don't understand KERA's goals. They don't understand what's going on now and they don't understand where it's supposed to be going" (24). Reasoning for the continuance of home-schooling could be that parents are not aware of what KERA entails. The gaps in the knowledge from a non-educator's standpoint make a difference in the support for KERA (Roberts & Kay, Inc. 6-7).

Parents get alarmed when they don't see the homework coming in that they used to see (Luhr 24). One example of a question is whether the tests used to measure performance are adequate. These as well as other components of KERA are new and different. Hughes insists, "We spend far too much time worrying about what the news media broadcasts and prints and far too little time worrying about what children are telling their parents" (24). This change and uncertainty leaves parents who want to be involved with their children's education frustrated.

Several sources reveal reasons why parents, not considering real-life application, independent study, portfolios, vertical age grouping, or an integrated curriculum, choose home-schooling. The first, a paper by Lawrence T. Williams, *Home Schooling: A Review of Research*, focuses upon a study by Mayberry in Oregon, who found the following four distinct types of home-schoolers: Socio-relational, Academic, Religious, and New Age (Williams 8-9).

The Socio-relational group is mostly concerned with the environment in which children's education is conducted. Parental involvement is a major component of their thinking. Some parents want involvement and complete knowledge of their children's lives. Immediately, one might think that all home-school parents are fundamental Christians who do not want "false" beliefs taught to their children. This certainly is not true. Of course, there is a lack of documentation and objective evaluation in home-schooling, which worries officials and state legislatures (Rakestraw 72). From reading the available literature, one ascertains that there is plenty of information generated from both sides of the issue.

In "Outlaw Generation: A Legal Analysis of the Home-Instruction Movement," the author states, "Dissatisfied, frustrated, and disillusioned with today's schooling, these parents feel powerless to influence or improve what they perceive to be chaotic, state-controlled education" (Harris 26). Including what several sources say, there are many reasons why parents choose home-
schooling. Each one is personal to the parent.

The second category of home-schoolers, termed Academic, is defined as those who are concerned primarily with the academic achievement of their children. Many home-schoolers claim that some of the most prominent people from history were homeschooled, so it is good enough for their children. Wolfgang Mozart, Thomas Edison, Leo Tolstoy, and Abraham Lincoln were educated at home (Seuffert 70-71). Some of these did not have superior abilities, but home-schoolers hold that instruction at home causes a person to advance more quickly (71). Rakestraw’s article shows several studies where home-schooled children have achieved higher than national averages on standardized tests (Rakestraw 73). Of course, educators are now dealing with performance testing, which is totally different.

The Religious heading describes the third group of Mayberry’s home-schooling parents as those who are primarily motivated to home school as a result of religious beliefs and values. The fourth group, New Age, is somewhat like the Religious. It is made up of parents who have a desire for an alternative orientation to their children’s education, relating to the parents’ personal beliefs. Jane A. VanGalen published a study in 1987 which found four general reasons for choosing home-schooling which relate to religious or personal beliefs. The first is parental belief in strengthening the family. The second, to protect their children from the influence of others who hold values and beliefs different than their own, is echoed by Rakestraw’s findings. Rakestraw said that some parents do not want their children in public schools, particularly for the reason of socialization. They fear negative peer influence (Rakestraw 74). In other words, they are worried about the quality of socialization. VanGalen’s third reason is children are believed by parents to have unique needs that are not met in the classroom. Parents also believe number four: since they know their child best, they will be able to provide a more appropriate education (VanGalen 163-164).

Ed Nagel, coordinator of the National Association for the Legal Support of Alternative Schools, says it is the natural responsibility of the parents to educate their children. He says they are “fully cognizant of their child’s needs and are fully qualified to integrate a series of programmed learning materials with their own family’s values and practices (Harris 27). VanGalen concludes that home-schoolers are devoted to their ideas so that even “modifying” the public school curriculum to include their perspectives and values would not attract these parents back (VanGalen 176).

Several home-schooling researchers have developed a somewhat artificial group division of home-schooling parents. Two groups have emerged in this attempt to understand home-schooling, the ideologues and the pedagogues. The terms were first used by Jane A. VanGalen in 1986 during her research of home-schooling (Knowles 196-197). They were later expanded by the other researchers.

The ideologues are described as a religious group unhappy with what they see as the public school’s “secular humanist” curriculum (Avner 30-31). In this group, families are often concerned with the breakdown of the family unit (Mayberry 210). Some families teach at home because they feel it is their responsibility given to them by God, just like feeding their children (Mayberry 216). Another component of religious aspects is the New Age movement. Some followers see home-schooling as a way to further this movement, to accept and love all things (216). Other researchers explain ideologues as parents who use the same activities of a public school simply transferred to the home environment with the exclusion of those elements that are
undesirable (Knowles 196). A study by Gustafson indicates that 34% of the home-schooled families surveyed "had no religious affiliation at all, and of the 66% who indicated an affiliation, only 13% considered themselves to be fundamentalist Christians" (Williams, Research 7). The majority of home-schoolees may fall into the next category.

Viewing their children as unique individuals, pedagogues fear that they are not recognized in the same way by the public schools (Mayberry 217). Avner describes the pedagogues as having "deep misgivings about the quality of education in formal school settings" (Avner 30-31). The parents see the children as objects in a large class with a rigid curricula. In a family labeled as pedagogues, there is a greater emphasis on intrinsic motivation; stated differently,

These families tend to place the learner central to everything else that transpires in the home with the belief that "schooling" does not automatically ensure an "education." (Knowles 196-197)

Mrs. Stephen Stovall, an interviewed home-schooled parent, does not see herself as fitting into any one of these categories. She states reasons from every category. Her religious convictions and values lead her to think that home-schooling is the only alternative for her growing son. In addition, Stovall loves spending time with her children and watching them mature academically. She also enjoys learning along with them. "Not that it was always rosy," she observes; "it is just like teaching school; you have your good days and your bad days. We are all people and we all have problems. We really learned to love each other through those things" (Stovall). (See Appendix A for more information about Stovall's convictions.)

While schools need to understand the parents' point of view, parents need to understand the processes involved in the public school system. First, teachers must be trained in talking and explaining to parents the processes of KERA. Perhaps when parents understand what their child will be learning in school, home-school parents will be more willing to involve their children in such a curriculum and philosophy. Robert Sexton, executive director of the Prichard Committee for Academic Excellence, advises that having teachers sit down with parents and explain what they are doing could dispel a huge amount of the apprehension parents might have about KERA (Luhr 24). The time it takes to do such a thing is frustrating to teachers, but parents need to know what and why the school is doing things. Claiming that the children's welfare comes first, home-schooling parents and the public school system could work together to provide more opportunities for furthering the children's welfare.

Conclusion
Home-schoolers do not want to be viewed with skepticism or ill will, but rather with interest and shared spirit (Sheffer 35). Neither do the public schools want to be viewed with ill will and distrust. Many public school advocates take a bristly attitude toward home-schoolers. "They perceive home schoolers' actions as the ultimate slap in the face for public education and a damaging move for the children" (Natale 26). Nonetheless, one can only see that the home-schooling parents have the welfare of their children in mind. If the welfare of children is the only argument that the school system has, then it needs to be doing far more persuasion of home-schoolers. Doing just what the public school wants, home-schooling parents are thinking of their children's welfare first.
“Responsible parties in both the public and the private sectors have recognized how hostile attitudes can undermine broader social goals, and some have taken steps to overcome this” (Lines 516). Patricia M. Lines feels “the greater burden of building bridges should fall on public officials, because they are the professionals in the partnership” (Lines 517). Meetings should focus on things such as the goals for the children. Some groups have come closer to tolerance and, in some places, cooperation (Natale 26). Complete cooperation being some time away, KERA advocates and home-schoolers must focus on one common theme among the many small ones: the students and the best possible education for them.

Works Cited
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There are many men who have a desire and love for drawing but no aptitude for it, and this can be discerned in children if they are not diligent and never finish their copies with shading. The painter is not worthy of praise who does only one thing well, as the nude, or a head, or draperies, or animal life, or landscapes, or such other special subject; for there is no one so dull of understanding that after devoting himself to one subject only and continually practicing at this, he will fail to do it well.  

Judging by his own standards, Leonardo da Vinci is definitely an artist with aptitude. It is evident upon studying his works that Leonardo did not concentrate on only one subject but on a wide range of skills, techniques, and studies. Vasari even described Leonardo as volatile and unstable, for he was always setting himself to learn many things, only to abandon them almost immediately. He explained, 'Clearly it was because of his profound knowledge of painting that Leonardo started so many things without finishing them; for he was convinced that his hands, for all their skill, could never perfectly express the subtle and wonderful ideas of his imagination.'

Leonardo was a master and a genius. He had his mind and his hands working so fast that he jumped from one study to another. He wanted to learn about everything and how it all worked. He wanted to devise a logical way to draw and sculpt whatever his mind thought or his eyes visualized. Petrarch's statement is apropos to Leonardo da Vinci: "Desire outran performance."  

Leonardo was not only an artist but a scientist as well. As an artist first and foremost, he was able to intertwine his scientific outlook and create realistic, workable pieces of art. He had studies which ranged afar. He studied the flower, the horse, the machine, the figure, architecture, lettering, geometry, draperies, and much more. He would do a series of studies on one subject in order to learn how to portray a precise and realistic rendering of the object. He would, during his study, devise a guide for solving the problems he faced during the study. After completing the study, Leonardo would build upon the study and use it in an actual painting or drawing. It has been found that not only did Leonardo use his studies in later paintings but so did many of his contemporaries. Many of Leonardo's drapery studies can be located in paintings of other artists. It is thought that Leonardo's drapery studies could have later been used as studies for other artists in the Verrocchio workshop. These artists would try to reproduce Leonardo's work and try to make it look as realistic as he had. If only they had the guide he had set to produce such magical drapery.

It was during Leonardo's later years that Italian artists changed their views on the human form. They had always been concerned with painting the scene or person; however, in the late fifteenth century artists started to be concerned with painting as an expression. These artists went from covering the human figure with drapery to using the drapery as an expressive tool. Leonardo wanted to have his drapery depict the form of the body underneath and portray the movement of the figure it was covering. He wanted to know how the drapery hung on the actual human figure. He wanted to show
how light and shadows combined to depict the actual appearance of drapery. Leonardo was determined to make the drapery work with the figure and depict the anatomical features rather than have it be a cover for the body. In order to portray these things, he composed a study and devised a way to uncover his dreams. Realistic drapery studies were one of the keys to Leonardo's success.

It has been found that Leonardo's main study of drapery came from a method which is known as "cast draperies." Cast draperies can be defined as the process of taking a length of fabric and dipping it into plaster and setting it up for a model. The fabric could be just arranged as a series of folds for a shadow and highlight study, or it could be draped over a figure to show how the fabric would hang on the human figure in motion or at leisure. Leonardo started using this process during his study made in the Verrocchio workshop. It was due to these studies that Leonardo was able to answer many questions by forming rules to follow when he would draw drapery.

Leonardo had an obsession with the way that light fell on drapery and how it played a key role in developing a realistic arrangement. In his studies, Leonardo would drape the fabric in a series of folds and flat areas. Upon doing so, he would draw the fabric out on a prepared canvas with silverpoint and then place highlights and shadows upon the drawing. He used three main levels of light and dark: a black for the deep shadows, a white for the bright highlights, and a middle tone of the two for the middle area, which was neither light or dark. Leonardo would lay the highlights and shadows as he saw them with his eye, not as he thought they would be. Leonardo said, "Making comes from matching." By this he meant that the eye must take what it sees and then transfer the image through the mind to the hand and onto the canvas. The only way to portray the true highlights and shadows of drapery is to draw or paint the true vision. An example of Leonardo's technique can be observed in Figure 1. Upon analysis of this drapery study, one can witness Leonardo's theory of matching and use of a light, middle and dark tone.

Figure 1: Leonardo da Vinci. Study of Cast of Drapery for a Seated Figure. Paris, Louvre.

The next rule that Leonardo devised was that

Draperies must be copied from nature, that is to say if you wish to make woollen cloth, use folds appropriate to that, and should it be Silk or fine cloth or rude cloth or linen or voile, differentiate the folds for each type, and do not base a garment, as do many, upon models covered with paper or thin leather, for you would be making a grave error.5

Leonardo painted his drapery of the material style. He was saying that different fabrics fold differently and that in order for a drapery to appear realistic, the artist must actually study how the fabric breaks and bends. He said that there were three natures
of draperies and therefore there were also three basic folds. He explained that many artists liked to paint drapery with harsh, sharp, angular lines; yet, he said to watch the flow of the fabric and portray it as it actually folds. The three folds he defined were as follows: heavy fabrics, such as wool, that have few folds; the middle fabrics, like cotton, which have some folds; or the light fabrics, like silk, which are very easily gathered and would have many folds. In this study Leonardo was saying that one must know the fabric and how it breaks and draw it as it would actually be. In Figure 2 the three types of folds can be found.

A = Heavy fabric with minimal folds
B = Middle fabric with some folds
C = Light fabric with many folds

His conclusion to this study was that a fold is at its tightest at the actual point of fold. This folding point would be most narrow and confined. The fabric would then gradually loosen up and become wider until it reached the point of lying flat upon a surface; this would be the widest point. Figure 3 is a clear demonstration of how Leonardo painted fabric in this style. Notice how he started with a tight fold and then allowed the fabric to fall past the fold and loosen up as it fell until it lay flat upon the flat surface of the floor.

Figure 2: Leonardo da Vinci. *The Annunciation.* Florence, Uffizi Gallery.

Figure 3: Leonardo da Vinci. *Study of Drapery.* Paris, Louvre.

After answering the question of how to make folds fit their fabrics, Leonardo continued to study the nature of folds and how to depict the actual fold. After studying Aristotle’s law of elasticity, Leonardo said:

Everything by nature desires to maintain its being. Drapery being of equal density and thickness on both sides desires to remain level; hence, when it is constrained by some fold or plait to depart from that flatness, you can observe the nature of that force in that part where it is most constrained.

Upon completion of the study of light on fabric and how the fabric folded, Leonardo focused on how the drapery worked with the anatomical figure to show movement and expression. As he observed,
Draperies that clothe figures should show that they cover living figures. Show the attitude and motion of such a figure with simple, enveloping folds, and avoid the confusion of many folds... (make) the parts that cling to the figure show its manner of movement and attitude.  

He also said that artists should depict

...garments according to the rank of those who are wearing them, long and short, fluttering or stiff in conformity with the movements; so encircling the figures as to bend or flutter with ends streaming upwards or downwards according to the folds, clinging close about the feet of separated from them according as the legs are shown at rest or bending or twisting or striking together within; either fitting closely or separating from the joints, according to the step or movement or whether the wind is represented.

Leonardo studied where the fabric would touch the figure in action. He did not act as if the drapery were the skin of the figure but rather a cover for the skin. He painted the fabric as if it were separated from the skin by air or other layers of clothing or drapery. Leonardo had his drapery enhance the human figure. The drapery circulated the anatomy, giving definition to curves and motion. This method allowed the viewer to see the bends, action, and the personality of the figure while it was fully clothed.

Through his drapery studies Leonardo was able to enhance his later works. It has been found that Leonardo, as well as many other artists, took his studies and incorporated them into actual compositions. The only major problem with that was that the drapery sometimes appears stiff because it was drawn from a stiff model. Even if the drapery had that appearance, it was still delicately rendered. The practice of taking a drapery study (Figure 4) and placing it in a composition can be witnessed in the painting entitled Virgin and Child and St. Anne (Figure 5). After studying Leonardo’s drapery studies of the Louvre, the viewer immediately can pick out the fact that the drapery which covers the Virgin’s leg was taken from Leonardo’s drapery study. It is evident in this painting that Leonardo was not able to complete the painting because the drapery was not nearly as intricate as that of his study. In his study there was a lot of detail and contrast of light and dark that was obviously omitted in the final painting. The reason for the omitted detail is unknown; however, there is the idea that he had reached the time in his life that he could not finish his work in the grandeur of his visualization, so why finish it?

Figure 4: Leonardo da Vinci. Study of drapery for the Virgin and Child and St. Anne. Paris, Louvre.
Another example of tying a study in with a composition is evident in the virgin’s arm in *Virgin and Child and St. Anne*. The *Study for a Sleeve* (Figure 6), located at the Louvre, is an exquisite example of Leonardo da Vinci’s studies. The sleeve is definitely reproduced in the finished painting, *Virgin and Child and St. Anne*.

The sleeve study tied together all of Leonardo’s rules and produced a magical vision of reality. When looking upon this painting, the viewer feels as if he could touch the drapery, feel the texture, and interrupt the movement within the composition. Leonardo da Vinci said, "If you (poets) call painting silent poetry, then the painter may say that poetry is blind painting." The goal of Leonardo was to create a figure of expression; through his many studies and rules, he reached that goal. He created pictorial poetry.

**Notes**

3 Turner, 63.
7 Gombrich, 51.
8 Kemp/Martin, 157-158.

**Bibliography**


Introduction
The 1848 Seneca Falls Convention is regarded as the birthplace of the feminist movement in the United States. Here, men and women activists authored a "Declaration of Sentiments" outlining numerous social, cultural, religious, and political reforms to bring about the equality of women and men.

Granted, gender equality could be inferred from the Fourteenth Amendment, but most states continued to restrict women's rights. Utilizing their severely restricted political influence as effectively as possible, women activists orchestrated the largest popular movement yet seen in the United States in their quest to gain political, economic, and social equality.

The women's rights movement developed in conjunction with several other socially progressive movements, including abolitionism and temperance. Following the Civil War, women took increasingly active roles in demanding rights for freed slaves and for all women. The agitation for recognition of women's rights was almost universally ignored as the radical Republicans who dominated the government in the Reconstruction Era emphasized the citizenship status of males, both African-American and immigrant. Faced with an apathetic public and indifferent politicians, women activists began to focus on the right to vote as the means to gain a fuller voice in national affairs, as well as to gain acknowledgment of other rights, such as expanded employment and education opportunities, equitable divorce laws, and property rights. The Nineteenth Amendment, stating that the right of citizens to vote "shall not be denied or abridged by the United States or by any State on account of sex," was ratified on August 26, 1920.

Influencing the tactics and duration of the suffrage movement was the distribution of women in all social classes, races, ethnic groups, religions, and subcultures. Women's primary identification tended to come from these groups, and their closest social ties were with men, children, and families, creating a major inhibition to the development of a sense of solidarity with other women. This distribution also meant women had divergent interests and goals when they joined the suffrage movement. In particular, women already privileged in class and/or race focussed on achieving equality with the men in their own socioeconomic strata, while leaving intact class and race divisions; women who were oppressed by race and/or class wanted to eliminate all forms of discrimination.

The women's movement was dominated by middle- and upper-class white women. Women who faced multiple forms of discrimination on the basis of race, class, or religion, as well as sex, were often preoccupied with day-to-day survival, had less access to the resources needed to start movements, and usually had a stronger desire to end class and race discrimination than to work for gender equality. On the other hand, for relatively privileged white women, gender inequality presented a major source of grievance in their lives. Efforts to accommodate these differences meant that "at various points in its history, the woman suffrage movement ignored black women, actively rejected black women, spoke eloquently against slavery, and engaged in explicit and virulent racism." The length and difficulty of the campaign was caused by more than divisions among women activists. Male prejudice against women, fear of change in the status quo of gender relations, and patterns of socialization and cultural beliefs regarding the nature and role of women also were major obstacles. Women operated from a severely

disadvantaged position in the male-dominated American society of the late 1800s and early 1900s. Wielding little significant political influence or power, they had no quick means to persuade most of the male legislators and politicians who would ultimately enact legislation enfranchising women.17

The common goal of female enfranchisement temporarily bridged the divisions among women, in part, because women foresaw a wide range of consequences of enfranchisement, including ending race discrimination, enacting social legislation, and increasing female autonomy. As a result, women activists pooled their resources and organized a vast popular movement that contributed significantly to a lasting change in society’s treatment of women. In the aftermath of victory, however, the women’s movement fragmented, due largely to differences over the necessity for an Equal Rights Amendment. Though women continued to advocate numerous causes, the women’s movement itself suffered a serious loss of cohesion that lasted for decades.

The suffrage movement is often remembered as the first step in the continuing struggle for women’s rights. More than a stepping stone, the suffrage movement is an illustration of the bedrock principles upon which the United States was founded, among them equality, freedom of expression, and individual liberty. Anna Howard Shaw, when president of the National American Woman Suffrage Association, made an eloquent statement regarding the necessity of woman suffrage:

... The reason [for granting women the vote] would remain even though all the evils I have named, or could name, should be abolished at once. We and the women who come after us should have our political power to use in any way we think best. We cannot tell what it will be necessary to do; what women will want to do. All we know is that women must have the power to take part in the government of their country [my emphasis].18

Demanding Citizenship

On July 19, 1848, the feminist movement in the United States formally began with the first women’s rights convention held in Seneca Falls, New York. Elizabeth Cady Stanton and Lucretia Mott, two major social activists of the nineteenth century, organized the meeting. Three hundred people attended "to discuss the social, civil and religious rights of women."19 The group also adopted a document called the "Declaration of Sentiments" [Appendix A].

Consciously modeled after the Declaration of Independence, the "Declaration" began with the assertion that all women and men were created equal and that they were endowed with inalienable rights, including the right to life, liberty, and the pursuit of happiness. The authors also found that throughout history, men had been guilty of "repeated injuries and usurpations" toward women.20 Following was a list of eighteen grievances which combined to create an overwhelming protest against the legal, moral, social, and economic conditions under which women lived in the mid-1800s. The "Declaration" demanded a sea change in the relations between men and women and in society’s treatment of women, and ranks as one of the most significant documents in American feminist thought.21

Among the features which distinguished the "Declaration of Sentiments" were the rudiments of a women’s rights ideology, which could be found within the document’s language, its focus upon injustice, and its call for action. The "Declaration" described the condition of women in terms of oppression. For example, upon marriage, women could not own property and were
considered a non-entities in the eyes of the law; also, women in the mid-1800s were often denied access to an education, particularly higher education, solely on the basis of their sex. The authors of the Declaration believed that such discriminations against women were part of a much larger pattern endorsed by American society and culture.22

The "Declaration" focused on the injustice in the treatment of women compared to that of men, by pointing out that any man, regardless of station, enjoyed rights which were denied to all women. Women were expected to live peacefully under a government in which they had no voice, while men demanded the right of political participation, and in fact had made that demand a central tenet in the founding of the United States. Society endorsed a double-standard regarding sexual morality, for an offense which condemned a woman to social ostracism was viewed with little consequence when committed by a man.23

The authors of the "Declaration of Sentiments" were not content simply to enumerate their grievances; they also called for action. With more accuracy than they may have intended, they acknowledged the difficulty of the task they had set for themselves ("we anticipate no small amount of misconception, misrepresentation, and ridicule")24 and pledged to utilize every device to achieve their ends, including petitions, public rallies, tract circulation, lobbying, and direct appeals to the state and national legislatures.

Among the resolutions endorsed, the authors desired recognition of a woman’s right to seek her own happiness, and the eradication of discriminatory laws that either prohibited women from full participation in society or placed them in a position subservient to men. They demanded that women be recognized as equal to men, and had been created as such. Women were to be educated about the oppression inherent in their current living conditions so that they could not claim out of ignorance to have all the rights they wanted. The elimination of the sexual double-standard would permit women to move freely and independently, allowing them equal opportunities in economic activities and in social and religious causes. Writing, speaking, and teaching in public and in private would no longer be deemed unsuitable for women.25

Finally, the "Declaration of Sentiments" stated that "it is the duty of the women of this country to secure to themselves their sacred right to the elective franchise." The call for female suffrage was included despite the hesitations of Lucretia Mott and Elizabeth Cady Stanton’s husband, Henry Stanton, who feared it would make the convention "look ridiculous." With the support of Frederick Douglass, Elizabeth Cady Stanton carried the suffrage plank—the only one not to receive unanimous approval—by a small majority.27 From these beginnings the woman suffrage movement became the locus of American feminist thought and eventually the largest mass movement yet seen in United States history.

Prior to the Civil War, women’s reform groups had tried to solve social problems in order to improve women’s lot, but they met with limited success. Most women activists were restricted by laws and social mores to speaking and to writing, and they could take little direct action themselves. Advocates often had difficulty convincing their audience to take seriously the messages they presented. One example of the modern feminist philosophy was evident in Lucy Stone’s extemporaneous speech, "A Disappointed Woman" [Appendix A], delivered in 1855 at a women’s rights convention. With this brief speech, Stone asserted that women, in education, in marriage, in employment, and in religion, were doomed to disappointment because of social restrictions on their opportunities. She condemned the notion that women only
sought selfish, meaningless rights in order to display themselves and smoke in public, and she also dismissed the idea of the "woman’s sphere." The only basis for the continuing refusal to grant women equal rights, in her eyes, was sexism, an argument she justified by pointing out that activities by women tolerated in one country were not permitted in another, demonstrating that restrictions on female behavior were the result of capricious social mores. She concluded by demanding that women be left to find their own destinies, not condemned from birth by their sex to a narrowly defined role.

Also influencing the progress of the women’s movement in the years before the Civil War were pressing political issues, particularly regarding sectional divisions and the slavery issue, that had grown so contentious that calls for women’s rights often drowned in the tumult. The early women’s movement accomplished little more than changes in some state laws regarding married women’s property rights and an increase in the educational opportunities for women. While these and other rights were important, women lacked the necessary political influence to effect extensive social change through legislation because they could not own property, could not vote, and could not hold office. The vote came to be seen as the way to gain this influence, and suffrage became a clear, easily understood goal around which support could be mobilized.

Necessary components for a broad social movement slowly began to accumulate, although the broadness of the movement was qualified. Given the marginalization of ethnic, racial, and religious minorities in American society in the nineteenth century, the women’s movement, like most widely recognized public activities, did not represent the needs of women of color. White, middle- and upper-class women were generally the only women with the economic means and sufficient social autonomy to participate. Though white activists often were involved in movements like abolitionism, they were willing to sacrifice the cause for black rights, if necessary, to realize the acquisition of expanded rights for themselves.

Despite discrimination and lack of resources, women of color contributed to the developing women’s rights movement. Often they overcame overt acts of prejudice in order to make their voices heard. For example, Sojourner Truth, at the 1851 Ohio Women’s Rights Convention, spoke over the objections of some white suffragists who feared that the women’s movement would come to be seen as inextricable from the abolitionist cause.

Sojourner made one of the most moving speeches in the history of the women’s movement, known as "And Ain’t I a Woman?" [Appendix A], in which she frankly discussed the dual oppression of racism and sexism endured by black women, and rebutted the common arguments against expansion of women’s rights. Unlike most of the white women’s rights advocates, Sojourner could speak from personal experience of society’s destructive racism and subjugation of women. First, she persuasively argued that popular conceptions about the physical inferiority of women were false, as had been demonstrated by her own ability to work alongside men in the plantation fields. Like black men, she had suffered the abuses of slavery, but she had also borne thirteen children. Brushing aside objections to black and female rights on the basis of black women’s perceived lack of intellect, Sojourner next stated simply that if one group enjoyed full rights, it was only just for all groups to be similarly included.

To abrogate the argument that women were not entitled to equal rights because Christ had been male, Sojourner asked, "Where did your Christ come from? From God and a woman! Man had nothing to do with
Following her brief speech, Sojourner received a standing ovation, though her example did not prevent numerous future acts of racial discrimination within the women’s movement.

Given the inherent limitations of the movement, woman suffrage remained a valid issue. Hundreds of women’s rights meetings were held, usually in the Northeast. Individual leaders were identified, each with her own following, and new members were recruited. After hours of discussion and debate, a shared ideology and the rudiments of a broad strategy to accomplish women’s rights goals began to develop. Women activists then started to communicate across long distances to coordinate their strategy. Women’s participation in other social movements, especially abolitionism and temperance, were also important to the growth of the women’s movement.

As women worked to end the institution of slavery in the American South, they gained experience in organizing, campaigning, lobbying, writing, and engaging in other activities necessary to propel a political movement. These women also encountered discrimination on the basis of their sex. For example, in 1840, at a world conference held in London attended by anti-slavery groups from the U.S., Britain, and Europe, women delegates were not to be seated, recognized, allowed on the floor, or permitted to vote. Led by Elizabeth Cady Stanton, most women delegates walked out of the meeting, joined by a number of men. In 1846, the National Anti-Slavery Society split into all-male and all-female groups over the proper extent of women’s involvement in the abolitionist movement.

Such discrimination prompted many women to widen their focus from emancipating slaves to guaranteeing equal rights to women and men.

Scholars today argue that many women activists involved in the abolition movement misappropriated the moral justification for expansion of political rights to groups beyond white males. For example, according to bell hooks, white abolitionists, both male and female, were opposed to granting social equality to black people. White women who worked to end slavery were motivated by religious sentiment, and attacked slavery itself, but not racism. The basis of their attack was moral reform. By not demanding social equality for black people, they revealed their commitment to continued white supremacy, a racial hierarchy that placed white men first, white women second, black men third, and black women fourth. As a result, the women’s rights movement, which began in moral reform activities, gained support because white women did not want to see a change in the social status of blacks until they were assured that their own demands for more rights were met.

Women activists often attempted to link the cause for black rights with their own demands for increased rights, though often with little success. In And Ain’t I a Woman: Black Women and Feminism, bell hooks describes this tendency as selfish and racist:

It did not enhance the cause of oppressed black slaves for white women to make synonymous their plight and the plight of the slave...

When white reformers made synonymous the impact of sexism on their lives, they were not revealing an awareness of or sensitivity to the slave’s lot; they were simply appropriating the horror of the slave experience to enhance their own cause.

Similar to the abolitionist movement, the temperance movement was dominated by moral reformers who took a maternalistic attitude toward lower social classes. Concern about the abuse of alcohol increased with the growth of cities, the concentration
of industrial workers in urban areas, and the arrival of new immigrant groups whose culture accepted casual alcohol consumption. The temperance movement was especially strong in the United States in the 1800s and early 1900s. Its goal was to promote abstinence from alcohol through persuasion and legislation. The National Woman’s Christian Temperance Union, founded in 1874, provided the epicenter for the movement. Frances Willard, holding a decades-long tenure (1879-98) as president of the organization, orchestrated its efforts to improve public morals through encouraging abstinence from alcohol and narcotics.

As with abolitionism, women temperance reformers gained extensive political experience as they faced sexist discrimination, prompting them to expand their objectives to achieving gender equality. For these activists, women’s rights were not the end but the means to accomplish the end. The end was the ability to enact social and political reforms they deemed essential to the improvement of the whole community, with concomitant improvement in the lives of women.

Temporarily displacing all other concerns in the national consciousness, the Civil War erupted in 1861. During the war, most women activists chose to forgo continuing agitation for female enfranchisement so that they could devote themselves to war work. Elizabeth Cady Stanton and Susan B. Anthony, through their Women’s National Loyal League, gathered 400,000 women’s signatures for a petition in favor of the ratification of the Thirteenth Amendment’s abolition of slavery. Clearly, they had not lost sight of their ultimate objective, as they also could not resist informing their audiences that petitioning was the only means of political expression currently available to women.

Union victory in the Civil War and the adoption of the Thirteenth Amendment achieved the antislavery goal which had brought many women into public life. But with the status of women’s rights now less defined, the drive for equality faltered badly. The nationally known abolitionist William Lloyd Garrison argued in May 1865 that the National Anti-Slavery Society could disband with the slaves having been emancipated, while his colleague, Wendell Phillips, replied that the Society had plenty of work to do until the freedmen had secured their political rights. Most women in the society agreed with Phillips, in part because they wished to link the pursuit of women’s rights with the cause for black rights.

At the first postwar Women’s Rights Convention in New York City in May 1866, Elizabeth Cady Stanton asserted that women should bond themselves with blacks and abolitionist men and appeal for universal suffrage on the basis of natural rights. According to bell hooks, nineteenth century white women’s rights advocates tried to make their lot synonymous with that of the black slave so that they could draw attention away from the slave and toward themselves. The result of this effort on the part of white women was twofold. First, as a group which was higher on the racial hierarchy, their interests overshadowed those of blacks, especially in the wake of a movement to assure rights to black people. Second, the constant analogies made between the suffering of "women" and of "blacks" tended to divert attention from the dual oppression of black women to the complaints of middle- and upper-class white women while simultaneously allowing white women to claim a universal sisterhood with all women.

However, while Phillips and other antislavery leaders wanted women’s support for black enfranchisement, they were unwilling to connect that cause with the drive for women’s rights, for the most part because they felt the task of black enfranchisement would be difficult enough without adding the burden of enlarging
women’s rights. Black male activists, though sympathetic with the cause for women’s rights, were unwilling to gamble their own enfranchisement for the extension of the vote to women as well. Black women were placed between black males and white females. Supporting woman suffrage would imply they were allying themselves with white women who had misappropriated the black cause for their own means, while supporting black male enfranchisement also meant supporting a patriarchal social order which would leave them with no voice of their own.

With a split thus developing between male antislavery and women’s rights leaders, a series of serious disappointments and losses battered the women’s rights movement in the year immediately after the war ended. Shortly after the Thirteenth Amendment ending slavery was ratified in late 1865, the Fourteenth Amendment was passed by Congress, guaranteeing blacks equal protection of their state’s laws and also providing for a reduction in a state’s Congressional representation if the vote were denied to male citizens. Referring to voting as a male right, the amendment proposed to advance the cause of black male suffrage while explicitly repudiating female suffrage. Many suffragists opposed the amendment on the basis that it added the word "male" to the Constitution, because they perceived it would deny the equal application of the law and equal acknowledgement of rights for women. Radical Republicans campaigned and won in 1866 on a platform that included ratification of the Fourteenth Amendment; the amendment was ratified in 1868 as it was originally written.

After the Republicans had won the White House, they began to formulate the Fifteenth Amendment, in an effort to limit state options for qualifying voters and to forbid states to deny the right to vote to U. S. citizens on the basis of race, color, or previous condition of servitude. Women’s rights activists lobbied to have the word "sex" included in the amendment, but most Republican leaders did not favor woman suffrage, and those who did feared jeopardizing enfranchisement of black men by endorsing woman suffrage as well. The Fifteenth Amendment was ratified in 1870 with the exclusionary language intact.

The losses of the two Amendment battles--introducing the word "male" into the Constitution with the Fourteenth Amendment, and the exclusion of the word "sex" in the Fifteenth Amendment--were therefore indicative of the obstacles facing the women’s rights movement, and also of the future tactics white women would take to assure their privileged status. The discovery that white men were willing to expand rights for black males while denouncing similar accommodation for women was a rude awakening for many white female activists. Recognition of the possibility that they might eventually be deemed to hold the same social category as blacks (or even that black males might eventually acquire higher social status than theirs) galvanized many women to continue to make outspoken demands for equal rights with white men.

Suffrage amendments introduced to the Kansas Constitution in 1867-68 and a Constitutional amendment introduced in Congress failed in 1868, although in 1869 Wyoming granted women the right to vote, and Utah followed suit in 1870. Limited success at the state level, failure at the national level, and increasingly bitter divisions between prewar abolitionists and women activists who had worked together for reform, were the primary causes in 1869 of a major split in the suffrage movement.

Two rival woman suffrage organizations were created in the split, which lasted until 1890. The National Woman Suffrage Association (NWSA), which was founded in 1869 by Elizabeth Cady Stanton and Susan B. Anthony, and which excluded men from
its membership, pushed for a federal amendment to grant women the right to vote. The American Woman Suffrage Association (AWSA), founded by Lucy Stone and Julia Ward Howe, sought to gain woman suffrage state by state. Theirs was the "less radical" group, and they encouraged men to join. The main difference between the two lay in their approach to the strategy of pursuing woman suffrage, via a national amendment, or state by state. The two organizations embraced both strategies in principle, but in practice the NWSA experimented with several approaches to national enfranchisement, while the AWSA was inclined to concentrate on the states. They were soon caught up in competition for the support of local and state suffrage organizations and for the loyalty of individuals supportive of the cause.

Women activists in both groups realized that achieving the goal of suffrage required a broad constituency of supporters and effective political strategy. However, women, who would be expected to support their own enfranchisement, had in fact been quite difficult to mobilize; having been successfully socialized to accept the prevailing view of woman's place, they instead often defended the status quo. Because male values shaped American culture and socialization, anything which alienated men was likely to be emotionally, financially, or socially costly to women. The "true woman" was pious, submissive, domestic, and antithetical to the activists who were agitating for the vote. Even women who privately supported these activists feared to do so publicly. Women activists thus had to mobilize women to go against numerous cultural taboos in demanding their right to vote, and then they had to require male politicians to take seriously this newly awakened political constituency.

Also remaining was the central problem, which was to make the government responsive to the demands of a group almost completely lacking in political power. Deprived of the primary tenet of a democracy, the ability to threaten legislators with reprisal at the ballot box, women's rights activists had to develop other strategies to capture the attention of policymakers.

An important argument developed in the late 1860 was a broad interpretation of the Fourteenth Amendment to mean that States denied women due process of the law and their rights as citizens by restricting their voting rights. The amendment states:

> All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the law.

They also cited the Fifteenth Amendment’s requirement that the right of citizens to vote "shall not be denied by the United States or any State on account of race, color, or previous condition of servitude." Victoria C. Woodhull, in a memorial [Appendix A] submitted to the U. S. Congress in 1870, argued that in the Constitution no distinction was made between citizens on the basis of sex, requiring the equal application of the law to all citizens. She interpreted the Fifteenth Amendment’s phrase "previous condition of servitude" to include all women, whose legal status she likened to a state of servitude. Since all citizens were guaranteed equal protection under the law by the Fourteenth Amendment, and the right to vote was guaranteed to all citizens, Woodhull
asserted that state laws which restricted female suffrage were in violation of the Constitution. Furthermore, she requested that Congress pass legislation to prohibit states from using sex as a basis for restricting citizens’ right to vote.55

Woodhull was invited to address Congress [Appendix A] on January 11, 1871, to advance her argument. With the assistance of Congressman Benjamin F. Butler, a radical Republican representing New Hampshire, Woodhull developed a series of cogent points to bolster her interpretation of the Fourteenth and Fifteenth Amendments. First, all citizens of a republic, as in the United States, were conferred sovereign power, including the right of self-government. Women and men were equal citizens, but the legal status of women, as defined by the common law roots of the American judicial system, did not permit women to exercise their full rights as citizens.56

Second, Woodhull argued that one portion of citizens had no power to deprive another portion of citizens of their rights. The three criteria of race, color, or previous condition of servitude for the protection of citizens’ rights, established by the Fifteenth Amendment, could be met by all women, since race and color comprised all people of both sexes, and since women had existed in a condition of servitude.57

Third, "no taxation without representation" was a fundamental right established when the U. S. became independent. Taxes were imposed upon women though they had no voice in the operation of their government. In fact, women had rights virtually identical to those of men, including the right to own and to control property, to be held accountable for their actions both in and out of court, and to life, liberty, and the pursuit of happiness. Yet their political rights, in the form of suffrage, continued to be abridged.58

Fourth, attempting to restricted the intellectual and political activity of the female sex doomed the progressive nature of the United States. In defining a republican government as based upon the will of the entire people, Woodhull declared, "[N]othing can compensate a citizen for the loss of his or her suffrage--its value is equal to the value of life."59

Though Congress took little action following Woodhull’s passionate appeal, the argument she developed did not wither into oblivion. In Missouri in 1872, Francis and Virginia Louisa Minor filed suit against a St. Louis registrar who had refused to allow Mrs. Minor to register to vote. The basis of their lawsuit was that women were enfranchised by the equal protection clause of the Fourteenth Amendment.

The U. S. Supreme Court found otherwise. In the Minor v. Happerset decision [Appendix A], women were recognized to be citizens, but inhabitants of the United States had already been defined as citizens before the ratification of the Fourteenth Amendment.60 The Court traced the definition of citizenship as being rooted in common law, and accepted by the public, legislators, and jurists to include persons born within the boundaries of the U. S., children of citizens, and persons naturalized by procedures set forth by Congress. But, "[t]he Constitution does not define the privileges and immunities of citizens,"61 nor did the Fourteenth Amendment "add to the privileges and immunities of a citizen. It simply furnished an additional guaranty for the protection of such as he already had."62

The Court reasoned that suffrage was not an automatic privilege or right of citizenship, since the Constitution clearly stated that citizens were not entitled to vote in all States, but only in the State in which they resided. Further, the Fourteenth Amendment, in addition to forbidding states to abridge the privilege of citizens, addressed representation in the federal government.
While based upon the whole number of persons in each state, representation could be reduced if States denied the vote to male inhabitants above twenty-one years of age, except under certain conditions. Denial of male suffrage under certain conditions was also an explicit recognition of the right of States to restrict suffrage, proving that suffrage was not an absolute right of citizenship. The Amendment referred only to the exclusion of males from suffrage as cause for penalty; although women and children were to be counted in determining representation, no penalty was to be inflicted upon States for excluding them from suffrage, reinforcing their conclusion.63

The subsequent adoption of the Fifteenth Amendment, which forbade restriction of suffrage on the basis of race, color, or previous condition of servitude, demonstrated that suffrage was not one of the "privileges or immunities" of citizenship discussed in the Fourteenth Amendment. As the Court viewed the situation, "Nothing is more evident than that the greater must include the less, and if all were already protected why go through with the form of amending the Constitution to protect a part?"64

Regarding the definition of a republican government, the Court found that no empirical definition existed. The Constitution recognized the governments of the various States as they existed at the time the federal government was created, though each State government varied in design and representation. All these States, except New Jersey, excluded women from suffrage, but they were nevertheless defined as republican, and therefore inclusion of both sexes in suffrage was not a predicate for republicanism.65

If suffrage had been intended to be an absolute right of citizenship, it would have been specifically enumerated, as were life, liberty, and property, adopted as early as 1791. States which originally ratified the Constitution and States later admitted to the Union all restricted suffrage to some degree. No State’s admission had ever been rejected for its limitations on suffrage, or specifically for limiting the suffrage of women. The former Confederate States, as a condition for rejoining the Union, adopted new constitutions designing republican governments; none enfranchised women, yet all were restored to their membership in the Union.66

Finally, citizenship had not always been a prerequisite for suffrage. At the date of the Court ruling in 1872, resident aliens were enfranchised in Alabama, Arkansas, Florida, and Texas, among others. Allowing noncitizens to vote invalidated the argument that suffrage was an absolute right of citizenship.67

The Court concluded that the long-standing precedent of the Constitution’s not conferring suffrage at the same time it conferred citizenship effectively settled the question, saying, "If uniform practice long continued can settle the construction of so important an instrument as the Constitution of the United States confessedly is, most certainly it has been done here. Our province is to decide what the law is, not to declare what it should be."68 The Court made clear that it had not considered women’s need for suffrage, but only women’s rights as they existed. Rather than determining the extent of the hardship imposed upon women by the withholding of suffrage, the Court examined whether it was within the power of a State to withhold. Their unanimous agreement was that the Constitution did not confer the right of suffrage upon anyone, therefore permitting the States to confer that right.69

Nullification of their most persuasive argument convinced feminists to return their focus to a new constitutional amendment that specifically enfranchised women. Addressing in 1872 the first woman suffrage convention held in Washington, D. C., Elizabeth Cady Stanton discussed a political
strategy for achieving their goal. The central tenet to Stanton’s strategy was the creation of a divisive rivalry between the two national political parties. Although ultimately such a rivalry was created, and much of Stanton’s strategy became the means to the end, conversely at this point the woman suffrage movement entered its darkest period. White women had attempted to ally themselves with freed slaves in pursuit of universal rights. However, when it became apparent that white men supported the enfranchisement of black men, but not of any women, white women abandoned their political solidarity with black people and urged white men to support the rights of white women in the name of racial solidarity. Many of Stanton’s arguments for female suffrage became racist and classist, designed to convince white, male legislators of the need for female suffrage in order to continue white supremacy. According to Bruce Miroff in Icons of Democracy, Stanton’s employment of racist rhetoric was designed to appeal to the vested interests of white male legislators in maintaining their dominance, by convincing them that white women were needed as their allies if they hoped to succeed. Whether Stanton herself was racially motivated in her quest for female suffrage remains debatable; her willingness to sacrifice the needs of minorities to gain satisfaction for the needs of (white) women is not.

In "The Politics of Woman Suffrage" [Appendix A] at the 1872 women’s rights convention, Stanton first reviewed traditional arguments for political equality, including defining the republican form of government, viewing suffrage as a natural and inalienable right, protesting that one class could not legislate for another class, pointing to the neglect and degradation inevitable to disenfranchised classes, and asserting that all the privileges of citizenship were a charade when the citizen has no voice in making and administering the law. These arguments had been made and would be made again, because "[t]here are no new arguments to be made on human rights." Continued emphasis upon human rights would "teach man that woman is not an anomalous being, outside all laws and constitutions, but one whose rights are to be established by the same process of reason as that by which he demands his own." Such an argument had been used in the past to extend suffrage to propertyless men, resident aliens, and manumitted black men, and Stanton believed it applied to women as well. In addition, a yet more powerful argument for female enfranchisement was "[b]ecause man and woman are the complement of one another, we need woman’s thought in national affairs to make a safe and stable government." Stanton found suffrage to be an important indication of the recognized equality of all citizens. Rather than permitting variation from State to State, a Constitutional amendment enfranchising women would assure that this fundamental principle would be impervious to change. She then appealed to the Republican party, currently holding the White House and Congress, to enact this amendment, and suggested that the Democratic party would make the issue theirs if the Republicans refused to act. As the party out of power, the Democrats were in a position to pursue female suffrage on the basis of principle, while the Republicans were governed by the demands of the electorate. The result would be the resumption of government control by the Democrats, who would then be recognized and rewarded as the party which had elevated women to equal status with men.

Having created a foundation for female suffrage on the basis of natural rights and the need for the enlightening influence of women in government, Stanton turned to a series of arguments based on gender differences and on racism. First, the exclusion of women from the enfranchised
class created an artificial distinction that, like those based upon wealth, family, or color, was oppressive and destructive. Alluding for the first time to classism, she contradicted herself by asking, "What kind of government, think you, American statesmen, you can build, with the mothers of the race crouching at your feet, while iron-heeled peasants, serfs, and slaves, exalted by your hands, tread our inalienable rights into the dust?" In a devastating assault upon the suffering endured by African-Americans, Stanton continued, "... slaves, but just rejoicing in the proclamation of emancipation, ignorant alike of its power and significance, have the ballot unasked, unsought, already laid at their feet ... ."76

Stanton next adopted the traditional attitude toward women, perceived as moral, pious, virtuous beings, but turned it to meet her own objectives. In the past, the innocence and fragility of women made their exclusion from political life a necessity, since exposure to the seamiest aspects of government would taint their purity. Stanton, however, found the male element to be destructive, selfish, and aggrandizing, saying, "Society is but the reflection of man himself, untempered by woman's thought."77 Refuting the supposed tainting of women by political involvement, Stanton said society's vision of women, only a reflection and dilution of masculinity, already tainted them: "The strong, natural characteristics of womanhood are repressed and ignored in dependence, for so long as man feeds woman she will try to please the giver and adapt herself to his condition. To keep a foothold in society, woman must be as near like man as possible, reflect his ideas, opinions, virtues, motives and vices."78 Political equality would free women from having to shape themselves into a masculinized world; as women expressed their true nature, society would benefit: "The need of this hour is not territory, gold mines, railroads, or specie payments, but a new evangel of womanhood, to exalt purity, virtue, morality, true religion, to lift man up into the higher realms of thought and action."79

Stanton did not explicitly oppose the extension of suffrage to all groups, although she did say that "government gains no new element of strength in admitting all men to the ballot-box, for we have too much of the man-power there already."80 But proceeding in a purely racist vein, she concluded, "Will the foreign element, the dregs of China, Germany, England, Ireland, and Africa supply this needed force, or the noble type of American womanhood who have taught our presidents, senators and congressmen the rudiments of all they know?"81

Stanton's third argument contained subtle appeals to the protection of the virtue of white women, with the assertion that "a man's government is worse than a white man's government with suffrage limited by property and educational qualifications, because in proportion as you multiply the rulers, the condition of the politically ostracized is more hopeless and degraded."82 Emphasizing a belief in the lesser quality of nonwhite groups, Stanton continued, "If American women find it hard to bear the oppressions of their own Saxon fathers, the best orders of manhood, what may they not be called on to endure when all the lower orders of foreigners now crowding our shores legislate for them and their daughters."83 Probably in rebuttal to Frederick Douglass, who called the Reconstruction Era the "negro's hour," Stanton warned women who might have been inclined to put off their own demands for suffrage until black male rights had been secured, that "the most ignorant men are ever the most hostile to the equality of women, as they have known them only in slavery and degradation."84 Stanton's disregard for the intellectual and political ability of nonwhites was further illustrated by her assertion that passion, bribery, and
fraud will be the deciding factors in elections in large cities.

In a final call to racial solidarity, Stanton said, "On all the blackest pages of history there is no record of an act like this, in any nation, where native born citizens, having the same religion, speaking the same language, equal to their rulers in wealth, family and education, have been politically ostracized by their own countrymen, outlawed with savages, and subjected to the government of outside barbarians." 85

Excuse may be made for Stanton's turn to racism, if one considers that she viewed the exclusion of women from the "negro's hour" as an outrageous example of sexism. Her class bias also influenced her recourse to racism. Though she held genuine sympathies for the poor and minorities, these tended to be marred by class condescension. Stanton also failed to understand that after the slaves were freed, they still did not have the same status as white women. She believed that suffrage was the last step remaining to equality for both groups. She demonstrated complete ignorance of the very different socioeconomic situations facing white women and manumitted blacks; hence "her racism was . . . an intellectual as well as a moral failure, an inability to understand the complexities as well as the inequities of power in America." 86

Classism and racism continued to be pervasive veins in the suffrage movement throughout its duration. However, these were not the only justifications used to advance female enfranchisement, nor is it absolutely certain that all suffragists held such beliefs. Continued emphasis upon traditional arguments based on natural rights revealed that numerous fair justifications existed for female enfranchisement. The "Women's Declaration of Rights" [Appendix A], written in the same decade as "The Politics of Woman Suffrage," provides an example. That Stanton was a co-author of the "Women's Declaration" even reinforces Miroff's explanations of her recourse to racism and classism as a political expedient rather than an expression of visceral personal prejudice.

During the celebration of the nation's centennial in 1876, no discussion of the contributions of women to the United States was planned. Stanton and Susan B. Anthony decided to protest by writing a "Women's Declaration of Rights." The document was largely a recapitulation of the arguments suffragists had been using since 1848. First, they stated that the history of the United States had been "a series of assumptions and usurpations of power over woman," in violation of the principles upon which the country was founded. Natural rights were equal in and the province of each individual. Possibly in response to the Minor v. Happerset decision, the suffragists found that rights, like suffrage, not specifically delegated by the Constitution were retained by the individual. Further, no person had the authority to exercise the rights of others without delegated authority, rendering void the laws which had granted the State governments the power to determine women's eligibility for suffrage; though women had not exercised their natural rights, they still retained them. 87

The body of the "Women's Declaration" impeached the current federal government. The suffragists found that sex had been made a crime by the inclusion of the word "male" in all State constitutions, which denied to women their equal rights. A fundamental tenet of legal rights, the writ of habeas corpus, was inoperative for women, as they surrendered most of their legal rights to become a single entity with their husbands upon marriage, with the male's rights taking precedent over the female's thereafter. Women were not permitted a trial by a jury of their peers, since women could not serve on juries, nor were they allowed access to the legal professions. Taxation without representation, unequal codes of law for men
and women, the capriciousness of women's legal status as it was determined from state to state rather than on a national level, and the lack of representation of women and their interests in government also were enumerated in the "Women's Declaration."

In another response to the *Minor v. Happerset* decision, the "Women's Declaration" condemned the Supreme Court as a mere echo to the party in power. As the *Dred Scott* decision, written when the pro-slavery Democratic party was in power, concluded that a black man was not a citizen because he could not vote, *Minor v. Happerset* reflected the anti-female suffrage predilection of the ruling Republican party by declaring that though a woman was a citizen, she still did not automatically possess the right to vote. Universal male suffrage had the effect of creating an aristocracy based upon sex. The result was that all women were made subject to all men, and the feminine virtues were sacrificed to the exaltation of masculine attributes, to the detriment of the country and to individual women. 89

Continued failure to extend the principles of government equally to women and men would become an increasingly serious detriment to the well-being of the country. In addition to social disorder and decay, the legitimacy of the government itself would fail as the existence of a governed and governing class overrode the founding principles of freedom and equality. Demanding that women be guaranteed the equal civil and political rights belonging to all citizens of the United States, the suffragists cast aside centuries of common law tradition, which held that woman was made for the fulfillment of man, and boldly concluded "that woman was made first for her own happiness, with the absolute right to herself." 90

Reconstruction ended in the mid-1870s, and as the movement to ensure the rights of emancipated slaves waned, the Progressive movement, coupled with the emergence of women's clubs, became a vehicle for women's rights. The NWSA and AWSA, merged in 1890 in order to pool their resources, began to pursue broader avenues to female suffrage. "NAWSA . . . consciously cultivated a broader base of support . . . by developing arguments that spoke to the specific interests of diverse women as well as their common interests as women. (The major and glaring exception to this pattern involved black women, who were shunned for both tactical and racist reasons.)" 91

Reformers for temperance, child labor, and suffrage often banded together to work for common goals through clubs. The women's club movement had originated in New England in the 1860s, and by 1890 led to the creation of a national association, the General Federation of Women's Clubs. State federation of women's clubs followed. These clubs often focused on cultural and literary ideas and "municipal housekeeping" as they worked to make cities into community homes. Like the abolition and temperance movements, women's clubs reflected what had become a tradition of voluntarist politics as women participated in civic affairs, organized themselves, and gained experience in public roles. 92

Another result of the multiplicity of women's clubs was the broadening of the suffrage movement to include women from backgrounds beyond the narrow white middle-class of the nineteenth century, 93 but the increased viability of the woman suffrage movement did not come easily.

Indicative of the class and race divisions which plagued the U. S. women's movement, the General Federation of Women's Clubs excluded women of minority ethnic and racial groups. In response, organizations such as the National Association of Colored Women developed. These groups often worked toward the same goals as white women's clubs, including
education, welfare, and philanthropic activities, in addition to a wider scope of activities intended to uplift the community as a whole, with services such as day care, kindergartens, orphanages, schools, and health care, as well as attempts to defend minorities of both sexes against racial discrimination.94

The efforts of black women have consistently been misinterpreted as being focussed on uplifting the black race as a whole. In part, this was because the names of their organizations often referred to race. However, white women’s organizations (Women’s Christian Temperance Union, General Federation of Women’s Clubs), which did not require racial identification, were closed to black women. Hence, black women had no choice but to form organizations (Colored Women’s League, National Federation of Afro-American Women, National Association of Colored Women) that focussed on themselves rather than all women.95

Most black women’s clubs were interested in suffrage, too, though not always for the same reasons as white women activists. Black women saw suffrage as a women’s and as a race issue; for instance, Adella Logan of the Tuskegee Institute said black women needed the vote to get a share of funds for public schools for black children.96 The National Association for the Advancement of Colored People, the National Federation of Afro-American Women, the New England Federation of Colored Women’s Clubs, and the Tuskegee Woman’s Club in Alabama, among others, worked for suffrage.97 Suffrage organizations were formed by black women in St. Louis, Memphis, Charleston, New Orleans, Boston, Los Angeles, and in diverse states such as Texas, New York, Idaho, and Maryland.98

Black women, like white women, believed that the vote would solve numerous social ills, although their priorities were somewhat different from those of white feminists. Black women wanted to end sexual exploitation, control prostitution, eliminate barriers to interracial marriage, enact protective legislation for working women, and promote compulsory education. In states which had already granted women the vote, minority women had successfully organized campaigns to elect blacks to public office and had generated support for the nationwide suffrage movement.99

Despite the proliferation of black women’s activism, white suffragists hesitated to recruit black women and further erode their support within the dominant white American culture.100 Black suffragists were too aware that white women hoped to use the vote to maintain the racial hierarchy. In particular, Southern white suffragists argued that female suffrage would help to assure white supremacy, since in the South, white women outnumbered black women by two to one.101

In addition to racial divisions, feminist leaders were unable to sort out the differences in interests between the poor, the working-class, and the middle-class.102 Professional and wage-earning women had been moved to increased interest in suffrage by the expansion of state involvement in regulating business.103 Their main concerns were wages, working conditions, unionization, and labor legislation. For them, the vote was to be a tool to address these other concerns. Upper-class women tended to see the vote as an end in itself. The divergence of goals for the vote thus made many working-class women more comfortable working for suffrage within their own organizations. Joining wage-earner suffrage leagues became a popular way for working women to retain their identities as women and as workers.104

By the 1910s, even the most conservative elements in the struggle for suffrage were willing to include working-class women in the movement. Their reasons were based
more on expediency than on egalitarianism. The situations of working-class women provided a powerful rationale for suffrage, and working-class women were thought to be important in overcoming the resistance of working-class men to woman suffrage. Furthermore, working-class women worked hard for suffrage among populations where middle- and upper-class women had little influence. Upper-class women became involved in the suffrage struggle only in the last decade of the campaign, demonstrating that the women's movement had become a single-issue campaign for suffrage; no longer a broad challenge to society as a whole, it thus ceased to threaten the status of upper-class women. Finally, the lack of the ballot was one issue which affected women of all backgrounds.

The Women's Trade Union League was probably one of the most effective coalitions of women from varying backgrounds. Upper- and middle-class women felt it offered them the opportunity to address problems ignored by the more conservative women's clubs. Working women needed an organization which responded to their needs as women and as workers, especially with the labor movement's inability to overcome sexism and to include working women within its ranks. The WTUL could respond to multiple needs of women from a variety of backgrounds.

Social feminism, which grew out of the club movement, was an enlargement of the notions of women's interests, women's sphere, and municipal housekeeping. These feminists were concerned with the social and economic problems faced by homemakers and working women. Although society commonly perceived women in domestic roles, social feminists recognized that millions of women worked and were often exploited, a situation which motivated them to pursue the power to make laws to insure health and safety. They organized special-interest groups that addressed problems specific to working-class women and drew them into the mainstream of American politics. In their attempts to prod state legislatures to take action, social feminists quickly realized they could be more effective if women had the right to vote.

The inclusion of social feminists, working-class women, and upper-class women also meant that "...suffrage became the symbolic focus of feminism, and as a result the woman's movement for a while took on the semblance of a single issue movement. Organization around a single issue has great advantages: it provides a focus, eliminates argument about priorities, and permits concentration of effort. Defeats and setbacks become an incentive to try harder." The arguments used to bolster the demand for female enfranchisement were more diverse as well. In addition to long-held stances based on natural rights and equality of the sexes, activists began to appeal to the widely held belief in women's love of home and children. Granted suffrage, women would be able to carry out their traditional duties more efficiently and effectively.

A case in point was the pamphlet "Women in the Home" [Appendix A] by Susan W. Fitzgerald, which developed the "municipal housekeeping" argument. Conceding that the place of women was in the home, Fitzgerald enumerated the responsibilities to which women were held in this environment, including keeping their home clean, preparing wholesome food, assuring their children's health, and instilling them with morals and values. Although women could control the boundaries of their own homes, they were helpless to change the larger environment in which they lived. Instead, the city government was responsible for such regulations. These governments, elected and run by men, were ultimately liable for the state of the larger environment. In spite of male responsibility for the poor state of city environments, women were held
accountable for the consequences of those conditions. Fitzgerald concluded that if women were to be held responsible, then they must be permitted to have a say in the creation and development of those conditions. Hence, the vote would allow women to become better housekeepers, both in their homes and in the community at large.\textsuperscript{110}

A speech by Carrie Chapman Catt, president of NAWSA, demonstrated an increasingly modern discussion of the roots of sex discrimination. The speech, "Prejudice Against Women" [Appendix A], was her presidential address in February 1902. Catt first acknowledged that the pursuit of female suffrage had been made more difficult by the fact that female suffrage had to overcome all the objections which had been raised each time male suffrage was extended in the past. In addition, a wholly different obstacle, "sex-prejudice," had to be negotiated, and this could be dislodged with neither logic nor common sense.\textsuperscript{111}

Women had been subjugated by four forces: obedience, ignorance, the denial of personal liberty, and the denial to property, leading to an egotistical tyranny of men over women. The result was a self-fulfilling prophecy:

The perpetual tutelage and subjection robbed women of all freedom of thought and action, and all incentive for growth, and they logically became the inane weaklings the world would have them, and their condition strengthened the universal belief in their incapacity. This world taught women nothing skillful and then said their work was valueless. It permitted her no opinions and said she did not know how to think. It forbade her to speak in public, and said the sex had no orators. It denied her the schools, and said the sex had no genius. It robbed her of every vestige of responsibility, and then called her weak. . . \textsuperscript{112}

Though men resisted changing women's status, the purpose of the women's movement was to destroy these old notions about women, and to eradicate the notion that obedience was necessary for women. The goal was to educate women and encourage their self-respect so that they would have the strength to be independent, and to educate men to realize that gender equity was a vast improvement for women and society as a whole. Attacking the long-held belief in the subservience of woman for being created from the rib of man, Catt said, "Every opposition to the enfranchisement of women is the last defense of the old theory that obedience is necessary for women, because man alone is the creator of the race."\textsuperscript{113}

Perhaps unrealistically, Catt continued that a major effort of the women's movement, to end automatic obedience of women in the home, had been accomplished. The remaining question was whether women as a group in society would continue to obey men as a group. Answering herself, Catt said that it was no more proper for all women to be governed by all men than it had been for one woman to be ruled by one man, and that as it had been established that it was not right for men to govern other men, neither was it right for men to govern women.\textsuperscript{114}

Catt was forced to relinquish the helm of NAWSA shortly thereafter, when her husband became seriously ill. Her successor, Anna Howard Shaw, though a skilled theorist and writer, lacked administrative skill and personal charisma. During her tenure, the suffrage movement stalled as NAWSA again suffered internal divisions over the proper strategy to pursue. Shaw favored a moderate approach while Alice Paul, Harriot Stanton Blatch, and Lucy
Burns advocated much more militant tactics. They established the Congressional Union (CU) and soon became independent of the NAWSA because of disagreement over taking the federal approach.\textsuperscript{115} NAWSA was a large, heterogeneous, inclusive organization tolerant of a wide range of perspectives.\textsuperscript{116} It had a "national, bureaucratic, mass membership movement umbrella under which a number of specific campaigns were ... carried out."\textsuperscript{117} At the other end of the spectrum, the Congressional Union was small, homogeneous, and exclusive; it adopted practices used by the suffragettes in Great Britain and had a concise agenda.\textsuperscript{118}

The CU attempted to punish the party in power for not advancing woman suffrage, while NAWSA remained nonpartisan.\textsuperscript{119} In 1914, the CU organized in the nine states which had granted women suffrage and urged women to reject Democratic candidates for their lack of progress on universal woman suffrage. In 1915, the CU began organizing in all 48 states. In 1916, its members, led by Alice Paul, founded the Woman's Party in the suffrage states, which was designed to concentrate the female vote in the Presidential election.

For its proposed strategy, the Woman's Party met with considerable criticism, both from other suffrage organizations, such as NAWSA, and from outside observers. In an August 1916 letter to the editor [Appendix A], published in The Outlook, Abby Scott Baker, the press chairman of the Woman's Party, explained the reasoning for their tactic. First, the Woman's Party vote was concentrated in the twelve Western states which had granted women suffrage thus far. All of its members were pledged to put suffrage first by voting for candidates who were pro-suffrage. While not denying that women voters were interested in other issues, including World War One and prohibition, Baker stated that suffrage was a major issue to Western women voters because a federal suffrage amendment was the only means by which interstate and national discrimination against women could be eliminated. In addition, it was the most expedient method to enfranchise women in the East, permitting Western women to "bestow the gift of freedom upon others."\textsuperscript{120}

Second, Western women resented the laws which barred them from voting if they happened to move to the East. More importantly, they disliked that they lost their American citizenship simply by marrying a non-U.S. citizen. Politically active Western women desired more influence in shaping national policies and in changing laws such as those determining citizenship. Though these women could vote, the full impact of women's interests could not be felt until all American women were enfranchised.\textsuperscript{121}

Baker went on to explain that a federal amendment was the preferred avenue for obtaining female suffrage as it was simpler and more convenient. A federal amendment was not an infringement upon the rights of States, since the method of amending the supreme law of the land had been agreed to by all States when they joined the Union. Passage of a federal amendment would be an example of the simple principle of majority rule. Demonstrating briefly that the Woman's Party fell prey to racial politics, Baker added that the enfranchisement of women would not complicate the "race problem," since there were six million more white women than black women in the South, and two million more white women that all black persons in the South.\textsuperscript{122} She then addressed the issue of granting suffrage to various groups by pointing out that suffrage had never been an issue over which states had exclusive control. Requirements for enfranchisement were established in the original Constitution and further refined in the Fifteenth Amendment and various naturalization laws.\textsuperscript{123}

To the criticism levelled against the mobilization of Western women to demand a federal suffrage amendment, Baker made
two responses. First, many women were willing to work for the enfranchisement of others, though they never worked to enfranchise themselves, and they realized the best avenue to reach this goal was by pressuring the national government. Second, Western women working to oust anti-suffrage candidates were not indulging in revenge against those who opposed them; they were merely pursuing the interests of other women. Calls for "Americanism," inflamed by the ongoing war in Europe, were aimed in part at persuading women to put aside their own issues for the American cause, but Baker asserted that the movement for female enfranchisement was a call for justice and would benefit the country as a whole, thereby serving the cry for "Americanism."  

The Woman's Party and CU merged in 1917 to form the National Woman's Party. In January 1917, the NWP began a series of pickets of the White House, polarizing attitudes on suffrage and earning widespread publicity. The federal government had been repressing civil liberties to inhibit public protest of U.S. involvement in World War One, and responded by illegally arresting the picketers and sentencing them to prison. Many went on hunger strikes, gathering even more publicity. While disavowing the pickets, NAWSA benefitted from the resultant publicity, and the NWP came to be seen as a radical fringe of a movement legitimately led by the moderate NAWSA.  

In 1915, Catt resumed the presidency of NAWSA from Shaw and reinvigorated the organization. Under her leadership, the group developed an agenda, the "Winning Plan," to target the states most likely to ratify a suffrage amendment and to accomplish that feat by December 1920. To implement her plan, Catt used an anonymous two-million-dollar donation to print suffrage pamphlets and literature, to send women across the country to speak and establish contact with state organizations, and to plan open-air meetings. By the end of World War One, NAWSA was the nation's largest voluntary organization with two million members. The CU militancy, NAWSA moderation, the growing number of states allowing women suffrage, and an overall shift in political structures increased the momentum toward enfranchisement. Another indication of its success was the increase in antisuffrage activism. According to Buechler, "the emergence of explicit opposition to a social movement is often the best indicator that the movement is succeeding . . . Although opposition to social movements is fairly common, opposition to women's movements is distinctive because it often consists predominantly of other women."  

Antisuffrage activity peaked from 1911 to 1916, with female membership numbering 350,000 in the national antisuffrage organization. Groups opposing the suffrage campaign included organized religion, political machines, diverse business interests, Southern Democrat men, and Southern women. The liquor and brewing industry, which associated woman suffrage with temperance, was the best-known large group opposing suffrage. The business and political groups tended to be male-dominated, and they sometimes colluded with the grass-roots female-dominated antisuffrage groups. 

The antisuffrage movement continued to defend separate spheres and sex-based division of labor and likened antifeminism to defense of the home and country. Their opposition concerned a wide variety of issues. Antisuffragists sought to maintain the separate spheres and the concomitant decorum and modesty of femininity, as well as the social distance believed necessary for men to continue to bestow status privileges upon women. Other arguments were rooted in the belief that suffrage would force more women into the labor force without alleviating their domestic responsibilities.
Not only would work and domestic responsibilities be a double burden to women, but competition and antagonism between the sexes also would increase. Antisuffragists predicted that suffrage for women would not result in sweeping change, bolstering their position by pointing to states which had already granted female suffrage and had seen little impact by the female vote. Leaders from privileged backgrounds often continued to view the suffrage struggle as part of a larger class struggle, and they identified more with their social class than with their gender group. Finally,alarmists prophesied socialist insurgency, race suicide, and the destruction of motherhood, femininity, the home, and the social order if suffrage were made universal. In a different variant of antisuffragism, some women, including Laura Clay in Kentucky, Kate M. Gordon in Louisiana, and Belle Kearney in Mississippi, worked for state-by-state amendments that would enfranchise only white women. They formed the Southern States Woman Suffrage Conference and campaigned against a federal amendment.

Despite such opposition, the U. S. House of Representatives approved the suffrage amendment by exactly two-thirds majority vote, 272-136, in January 1918. The U. S. Senate passed the suffrage amendment on June 4, 1919, by a 60-36 margin. Eleven states passed the amendment quickly, and eleven more followed along. In August 1920, with 35 states in the fold, Tennessee became the needed 36th, and approved ratification by a one-vote margin. On August 26, 1920, the Secretary of State proclaimed the ratification of the amendment.

Prior to its ratification, the Nineteenth Amendment was regarded by many feminists as a panacea which would finally grant to women nearly equal rights with men. Believing they had accomplished their goal of equality for women, many suffragists looked forward to a period of rest. However, as described by Buechler, ratification of the Nineteenth Amendment was not wholly beneficial to the women’s movement:

Single issue movements by their very nature do not survive success. While the suffrage movement was going full speed ahead, few people had time to ask, what do we do after we win? Perhaps even those who knew better assumed that somehow attaining the long-sought goal would bring in its train fundamental changes in the role and status of women in American life. Victory, then, brought an unforeseen crisis.

Recent scholarship regarding the post-1920 period indicates the women’s movement experienced shifting priorities, divisive debates, reduced visibility, and a marked lack of success in campaigns following the ratification of the suffrage amendment. Many see the post-suffrage amendment era as a time of relative decline in women’s political mobilization. The loss of momentum in the broad-based women’s movement had several causes. A women’s voting bloc never emerged, as women voters broke down along race and class lines just as men did. Feminist groups fragmented to pursue a variety of goals, which sometimes conflicted with one another. The Equal Rights Amendment, the singular goal of the National Woman’s Party, alienated many women’s groups after suffrage, particularly unionists and social reformers. Social feminists anticipated social reforms and the entry of women in major positions in party and government leadership. NAWSA transformed itself into the nonpartisan League of Women Voters, and devoted itself to studying public issues at the local level; concern for the legal status of women and
the situations of women workers were only one part of a broad platform of interests. The idea that female suffrage would be a panacea for women’s ills caused the limits of the power to vote to be overlooked. Black males had been almost completely disenfranchised, despite the Fifteenth Amendment, through a variety of structural obstacles such as the white primary, grandfather clauses, poll taxes, and literacy tests. Other ethnic minorities, such as Native Americans, Hispanics, and Asians, were mostly excluded from the political process as well. Recent immigrants from eastern and southern Europe lacked the social or economic standing to be politically active. Many foreign- and native-born women also were inhibited by their belief that politics was “men’s business.” The location of polls in such places as fire stations and saloons, which were virtually off limits to self-respecting women, also impeded their vote.

The political influence women gained through the vote was indirect. First, the ballot granted women more influence on male politicians and enabled them to lobby more effectively for reforms. Second, the use of referenda allowed women a role in direct legislation by petitioning to overrule enacted legislation and to initiate new legislation; this form of direct democracy also meant women could avoid the seamier side of politics.

Having large numbers of women in political office was not a goal of most suffrage advocates, although through campaigning for the Nineteenth Amendment, many women had gained valuable experience as party workers and some as officeholders. In the first election after women gained national suffrage, women campaigned for and won offices in only 23 of the 48 states. During the 1920s, a few thousand women aldermen and councilmen, and a dozen women mayors were elected; some women served as county school superintendents, county clerks, treasurers, auditors, or recorders. At the state level, 149 women were elected legislators. Occasionally, a woman was appointed state auditor, treasurer, or secretary of state. Nellie Taylor Ross of Wyoming and Miriam Ferguson of Texas became governors. Although these women were pioneers, by necessity they expressed very conservative political ideologies to broaden their appeal to the electorate. For instance, even while serving as state governor, Ross said that women fulfilled their highest destiny as wives and mothers within the home. In the states where women were elected, they held a very small proportion of the available offices, and in most states, no women at all held office. The difference in the total number of women officeholders before and after ratification was almost nonexistent.

On why more women did not seek public office, Eleanor Flexner wrote:

No woman suffragist pushed herself aggressively forward as a candidate immediately after passage of the amendment in 1920. The suffragists in 1920 were not only, many of them, weary of campaigning; they were confused. The idea that 'the ladies' were not really interested in politics—as politicians understood the term—rather in ‘reform,’ which was quite another matter. Nevertheless, recognizing the potentially vast pool of resources embodied in newly enfranchised women, the Democratic and Republican parties appointed women to their national committees. An equal number of men and women were placed on state committees. During the 1920 conventions, the Republicans also endorsed five League of Women Voters proposals, while the
Democrats endorsed fifteen. Both parties had women delegates at their conventions. Republican presidential candidate Warren G. Harding endorsed the feminist goals of equal pay for equal work, an eight-hour workday, maternity and child welfare, and a federal department of social welfare.\textsuperscript{148}

Another illustration of women’s political power early in the 1920s was the passage of the Sheppard-Towner Act, heavily lobbied by women activists. Despite congressmen’s fear that it would open the way for other demands for federally financed welfare programs, the act established public health centers and prenatal clinics, and received an initial appropriation of $1.25 million.\textsuperscript{149} Female activism persuaded Congress to rewrite citizenship laws in 1922. The Cable Act legislated that American women would no longer lose their citizenship if they married aliens. On the other hand, foreign-born women no longer automatically received citizenship if their husbands did; they had to qualify on their own.\textsuperscript{150}

Increasing the scope of female political activity, Florence Kelley led activists in the pursuit of a constitutional amendment to outlaw child labor. However, the effort to ratify this amendment demonstrated the limits of women’s political power. Because this amendment would have immediate consequences for employers who depended upon cheap child labor, the National Association of Manufacturers, the National Farm Bureau Federation, and the Grange lobbied against the amendment, saying that it was actually part of a Communist plot. Their combined power contributed to the amendment’s defeat by early 1925, and also meant that party leaders lost their fear of women’s influence as a bloc.\textsuperscript{151}

The major schism in the women’s movement erupted over the Equal Rights Amendment, creating divisions among feminists that have lasted to the present day. The pure feminists of the NWP and the social feminists of the other women’s organizations disagreed on a fundamental issue: the need to pursue purely feminist goals following the suffrage victory. The NWP believed so; the League of Women’s Voters, the US Women’s Bureau, the Women’s Trade Union League, and the Consumer’s League did not.\textsuperscript{152} One camp attacked gender categories and called for a uniform standard for the sexes. The other supported gender-based protective legislation in the interest of working-class women.\textsuperscript{153} The National Woman’s Party argued such protection could promote discrimination against women workers, while social feminists and various union groups viewed an end to protective legislation as a step backward.\textsuperscript{154}

Subordinating women’s rights to other causes, social feminists established the Women’s Bureau, which was to lobby on behalf of working women. It orchestrated the activities of the Women’s Trade Union League, the National Consumers’ League, the League of Women Voters, the Women’s Christian Temperance Union, the Young Women’s Christian Association, the National Parent-Teacher Association, the General Federation of Women’s Clubs, the American Association of University Women, and various church and labor organizations, all of which endorsed issues far from the heart of feminist ideology.\textsuperscript{155}

The NWP was the only women’s group in the 1920s to continue with a purely feminist agenda.\textsuperscript{156} Following the ratification of the Nineteenth Amendment, Alice Paul of the National Woman’s Party insisted that women were still "subordinate to men before the law, in the professions, in the church, in industry, and in the home."\textsuperscript{157} Paul disliked protective legislation on the basis that it implied women were less able than men in taking care of themselves. She wanted "absolute equality for women and rejected all special privileges."\textsuperscript{158} Differences among women in class, race, and social roles were ignored. Other goals proposed as worthy of
pursuit, such as disarmament, birth control, or ensuring voting rights for black women, were vetoed by Paul as peripheral to the main issue of legal equality. The NWP advocated an Equal Rights Amendment that would achieve this goal definitively, and beginning in 1921 made this the new single issue to which it would devote itself.\(^{159}\)

The Equal Rights Amendment, first introduced to the judiciary committee of the House and Senate on December 2, 1923, stated: "Men and women shall have equal rights throughout the United States and every place subject to its jurisdiction."\(^{160}\) Women trade unionists and some progressive reformers attacked it as class-biased and suited largely for the experiences of professional women and highly skilled workers.\(^{161}\) The NWP’s assumption that women should have jobs or careers, its ambivalent stance on marriage and motherhood, and its general distrust of men made ERA support difficult to find among wives and mothers, as well as workers.\(^{162}\) The rivalry between Alice Paul’s militant feminists and the moderate social feminists, which had been productive when both groups wanted the same outcome of suffrage, now became destructive as women failed to agree on goals and as members of each camp came to think ill of the motives of the other.\(^{163}\)

Mary Anderson, head of the Women’s Bureau, articulated the opposition to the ERA:

In the first place it was unsound from the legal point of view. There was no definition of ‘rights.’ There was no definition of ‘equality.’ If a state law had different standards for men and women, would the amendment mean that the men should have the women’s standards, or the women have the men’s? No one knew that answer. In the second place it was unnecessary because most of the real discrimination against women were a matter of custom and prejudice and would not be affected by a constitutional amendment. In the third place it was dangerous because it might upset or nullify all the legal protection for women workers that had been built up through the years, which really put them on a more nearly equal footing with men workers.\(^{164}\)

The argument that the ERA would effectively repeal all protective legislation was used again and again in the debate regarding its merits. Social feminists felt working-class women were especially subject to exploitation by employers. Working-class women had limited education and skills but often had to work and, thus, often had to take whatever employment was available. Protective legislation insured their health and safety.\(^{165}\)

In favor of protective legislation also were arguments that women workers were not working only for pin money, but contributed to the support of themselves, their husbands, children, and other dependents just as men did. The Women’s Bureau asserted that harsh working conditions were more harmful to women than to men because women workers were doubly burdened with housework and child care.\(^{166}\)

Alice Paul rebutted that protective legislation should apply to all workers to improve industrial working conditions. She also pointed out the sex discrimination in state laws. Burnita Shelton Matthews conducted a state-by-state survey for the National Woman’s Party to assess the status of women in America, confirming Paul’s assertions. The vote by itself had done little to improve the lot of women. Instead, the attitude of society toward women needed to be changed.\(^{167}\) Paul believed the ERA was the best vehicle to enact that change, but her
pursuit ultimately proved to be damaging to the cause she sought.

Women continued to be vigorous advocates for social reform, but the 1920s were a time of profound disillusionment and disruption. The aftermath of the suffrage movement, more than the suffrage movement itself, set the stage for the tactics and emphases in the women's movement that occurred in subsequent decades.

While white women did earn marginal gains as a result of suffrage, black women saw no improvement in their status. According to hooks, "Voting privileges for women changed in no fundamental way the lot of women in society, but they did enable women to help support and maintain the existing white racist imperialist patriarchal social order. To a very grave extent women obtaining the right to vote was more a victory for racist principles than a triumph of feminist principles."

When the vote failed to make any change in the lives of black women, many became complete disillusioned with women's rights. Their support for woman suffrage had been turned into a weapon used to further strengthen white supremacy and oppression of black people. Obtaining rights for women had little impact on their social status because white racial imperialism kept black women from enjoying full citizenship. While white women celebrated the realization of their political rights, black women saw the construction of a racial apartheid system that threatened their rights far more seriously than sexism ever had.

With the acquisition of suffrage, white women and black women had almost no common goals any longer. As militant white women turned their attention to the Equal Rights Amendment, black women fought for survival—to end lynching of black men and women by white mobs, to improve the conditions of poverty-stricken blacks, and to provide educational opportunities. In the 1920s and 1930s, black women appealed to one another not to let sexism prevent them from doing everything possible to improve the lot of all black people, but with the resurgence of virulent racism in the 1920s, black women quite naturally chose to forgo work for women's rights in order to focus on resisting racism.

By the end of the 1920s, antisuffragists were calling the Nineteenth Amendment a failure, while supporters apologized for the modesty of women's achievements. Despite the gains women did make during that decade, they paled in comparison to the extravagant expectations that had accompanied ratification of the Nineteenth Amendment. Carrie Chapman Catt lamented the old prejudices which limited women's freedom of action within political parties. Charlotte Perkins Gilman agreed, saying that women were limited to the fringes of routine political activity. Later historians would call the era "The Hope Deferred," "The Great Withdrawal," and "the failure of feminism." These assessments overlooked the difficulty older women had overcoming years of being conditioned to believe that women had no business in politics. Many states, while recognizing the right of women to vote, did not recognize the right of women to hold public office. An Arkansas court held that women could not be elected to public office, and Georgia amended its constitution to bar women from elective office. The Oklahoma constitution barred women from major public offices until 1942. While a Michigan court stated that the Nineteenth Amendment meant women could hold public office, a New Hampshire court asserted that the amendment applied only to voting.

According to Scott, "To argue that suffrage failed because women have not voted as a bloc is curious, since most political issues do not divide on sex lines." Suffrage indeed helped women improve their status in a number of ways. Women moved into the political parties and into local, state, and national offices. Though women were
not yet as politically effective as they should have been given their numbers, the situation substantially improved after suffrage. Women’s organizations in subsequent decades used the vote to advance many causes and to make state and federal legislatures enact legislation on a variety of issues. Equal pay bills, the prohibition of sex discrimination in the 1964 Civil Rights Act, affirmative action, and the creation of commissions on the status of women by three Presidents [as of 1975] and numerous state governors were all a result, at least partially, of the political power women gained with the right to vote.173

The suffrage movement accomplished many of its goals, especially increasing women’s political participation, broadening the legislative agenda to include many of the social reforms women activists had tirelessly advocated, and developing a wider range of women’s organizations with diverse agendas. At the same time, the post-suffrage decade saw a number of serious setbacks and disappointments, most clearly exemplified by the bitter debate over the Equal Rights Amendment. Though by 1930, the women’s movement was splintered and disorganized, and would remain so until the civil rights movement of the 1950s and 1960s, it had matured and established itself as a permanent feature of the American political and cultural landscape. The movement had achieved at least tacit support of the dominant white middle class, providing an important foundation for the resurgence of feminism in the late 1950s with the publication of Betty Friedan’s The Feminine Mystique. Despite lasting racial and class divisions, the suffrage movement also established enduring testimony to the belief that the women’s movement and its feminist philosophy could make important differences to the lives of all women.

Notes

3Buechler, 11-12.
4Buechler, 135-136. A note of explanation regarding nomenclature is necessary. "Woman suffrage" was the common expression during the struggle for the Nineteenth Amendment, while the suffrage movement today is regarded as a stage in the larger "women’s movement." Reference shall be made to "woman suffrage" when specifically discussing aspects of the suffrage movement, while the larger movement shall be discussed in terms of "women’s rights" and the "women’s movement," in keeping with current terminology.
6Scott, 47.
8Scott, 9-10.
10Scott, 10.
11Scott, 10.
12Scott, 10.
13"Declaration of Sentiments," paragraph 20.
14"Declaration of Sentiments," paragraphs 21-33.
15"Declaration of Sentiments," paragraph 30.


Scott, 14.

Crowe-Carraco, 4/6/93.


"And Ain’t I a Woman?," Paragraph 4.

Scott, 12.

Crowe-Carraco, 4/6/93.

hooks, 124-126.

hooks, 126.

Crowe-Carraco, 2/23/93.

Scott, 14-15.

Scott, 15.

hooks, 141.

Scott, 15.

hooks, 3.

Buechler, 139.

Scott, 15-16.

Scott, 16.

hooks, 126.

Crowe-Carraco, 2/16/93.

Crowe-Carraco, 2/9/93.

Scott, 16-17.

Scott, 14.

Scott, 12.


Woodhull, Address, paragraphs 3-4.

Woodhull, Address, paragraph 7.

Woodhull, Address, paragraph 9.


Minor v. Happerset, paragraph 18.


Minor v. Happerset, paragraph 25.


Minor v. Happerset, paragraph 32.

Minor v. Happerset, paragraph 33.

Minor v. Happerset, paragraph 34.

Minor v. Happerset, paragraph 35.

hooks, 3.

Miroff, 141.


Miroff, 141.

"Women's Declaration of Rights," paragraphs 4-10.

"Women's Declaration of Rights," paragraphs 11-12.


Buechler, 58.

Crowe-Carraco, 2/23/93.

Buechler, 55.

Crowe-Carraco, 2/23/93.

hooks, 163.

Crowe-Carraco, 2/23/93.

Crowe-Carraco, 4/13/93.


Daniel, 36-37.

Crowe-Carraco, 4/13/93.

hooks, 170.


Buechler, 55-56.

Buechler, 148.

Buechler, 149.

Buechler, 149.

Buechler, 148.

Daniel, 33-34.

Scott, 48-49.


"Prejudice Against Women," paragraph 5.

Buechler, 57.

Buechler, 57-60.

Buechler, 57-58.

Crowe-Carraco, 4/13/93.

Buechler, 171.

Buechler, 185-186.

Buechler, 182.

Buechler, 182.

Buechler, 181.

Buechler, 183.


Daniel, 4.

Daniel, 40-41.

Scott, 49.

Buechler, 2.

Crowe-Carraco, 4/13/93.

Daniel, 48.

Daniel, 22.


Darcy, 2.

Darcy, 50.

Darcy, 11.

Darcy, 11. (Originally appeared in *Century of Struggle: The Women's Rights*...

137Daniel, 48.
138Daniel, 48.
139Daniel, 49.
140Daniel, 49.
141Buechler, 210-211.
142Elshtain, 66.
143Buechler, 211.
144Daniel, 48.
146Daniel, 52.
147Daniel, 52.
149Daniel, 52.
150Elshtain, 66.
151Buechler, 210-211.
152Scott, 49.
153Daniel, 52.
154Daniel, 52-53.
155Daniel, 54-55.
156Daniel, 52-53.
157hooks, 171-172.
158hooks, 172.
159hooks, 173-174.
160Daniel, 51.
161Scott, 47.
162Scott, 48.

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