Defending the credibility of anti-vivisectionists

Presented by Helen Marston, Animals in Society Conference, Newcastle, July 2009

Abstract/Intro:

Opponents of animal research have often been criticized for using old material to argue their case – photos of cats with eyes sewn shut, monkeys restrained in stereotaxic devices with their brains exposed to electrodes, and the decades-old argument about Thalidomide being 'successfully' tested on animals and later causing widespread deformities in children.

Such arguments raise the question of whether our research methodologies have progressed or whether we continue to cling to archaic practices. We will today consider the current situation by looking at case studies of recent protocols and showcase how such practices have not improved. I will also look at the efficacy of animal tests to illustrate that Thalidomide was not a remote case.

Today's anti-vivisectionists no longer espouse the 'poor animals' approach. They recognize that such emotive tactics have little effect when debating health experts. Instead their arguments are based on scientific evidence which even the staunchest of pro animal research advocates can no longer fail to acknowledge.

From the Archives…

In the mid nineteenth century, French physiologist Claude Bernard reinstigated animal experiments by convincing the scientific community that if a disease could not be replicated in animals it could not exist. It became understood amongst scientists that animal experimentation could provide both money and reputation.

He is quoted as saying: "The physiologist is not an ordinary man: He is a scientist, possessed and absorbed by the scientific idea that he pursues. He does not hear the cries of animals, he does not see their flowing blood, he sees nothing but his idea, and is aware of nothing but an organism that conceals from him the problem he is seeking to solve."[1]
Bernard did not consider his work to be immoral and was renowned for purloining the family pet. So callous and graphic was his work that his own wife, disturbed by the tortuous activities in her own home, founded one of the world's first anti-vivisection organisations.

Harry Harlow

In the 1950's and 1960's Harry Harlow was renowned for his work on maternal deprivation and social isolation of baby monkeys.

His 'Pit of Despair' experiments involved baby monkeys left alone in darkness for up to one year from birth, or repetitively separated from their peers and isolated in a chamber. These procedures quickly produced monkeys that were severely psychologically disturbed and served as models for human depression.

In his "Monkey Love' experiments he separated infant monkeys from their mothers a few hours after birth, then arranged for the young animals to be "raised" by two kinds of surrogate mother machines, both equipped to dispense milk. One mother was made out of bare wire mesh. The other was a wire mesh covered with soft terry cloth. Harlow's first observation was that monkeys who had a choice of mothers spent far more time clinging to the terry cloth surrogates, even when their physical nourishment came from bottles mounted on the bare wire mothers.

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[1] In Pity and in Anger Micah, 1988, quoted by Ray Greek and Jean Swingle Greek in 'Sacred Cows and Golden Geese' p.29.

Britches

Many people are familiar with the story of Britches – a stumptail macaque monkey who was born into a breeding colony at the University of California 1985. He was removed from his mother at birth as part of a psychology experiment into maternal deprivation, and had his eyelids sewn shut as part of a three-year sight-deprivation study.

Britches was removed from the laboratory, along with 700 other animals, when he was five weeks old during a raid by the Animal Liberation Front. The activists say they found Britches alone in a cage with bandages around his eyes and a sonar device attached to his head that emitted a high-pitched screech every few minutes. He was clinging to a device, covered in toweling, apparently intended to serve as a surrogate mother.

Beneath his bandages were two filthy and soaked cotton pads, covering his sutured eyelids. The sutures had torn through lid tissue resulting in multiple lacerations of the lids.

Dr. Grant Mack, president of the American Council of the Blind, called the experiment "one of the most repugnant and ill-conceived boondoggles that I've heard about for a long time".

When he was five months old, Britches was flown to a sanctuary in Mexico and given to an elderly female macaque who had already raised several orphans.

By looking at these old images and considering the examples provided, we can see how unscrupulous we have been to animals in the past, often just to satisfy our curiosity - to quench an insatiable thirst for knowledge regardless of the cost paid by others - but things are different today. Question any company that conducts animal testing and they will always assure you that animals are only used when absolutely essential and there is no other alternative. The animals are treated with the utmost respect. Researchers follow a legally enforceable code of practice and all research is scrutinized and approved by an ethics committee. It could be easy to conclude that the types of research just mentioned don’t happen any more. Unfortunately however, they do!

Todays research
Dr John Pippin of Physicians Committee for Responsible Medicine lists the following examples of the types of inhumane procedures that animals are subjected to today:

1. Creating heart attacks, heart failure, abnormal heart rhythms, strokes, and other cardiovascular traumas in monkeys, dogs, pigs, and other animals
2. Dropping weights onto rodents to produce spinal cord injuries and paralysis
3. Producing fatal burn injuries in dogs to study burn treatments
4. Inducing a state of “learned helplessness” in dogs, primates and other animals by subjecting them to an inescapable source of fear or frustration, such as electric shock, forced swimming to exhaustion, or hanging by their tails, until the animals despair and stop resisting the irritant
5. Implanting electrodes into the brains and eyes of monkeys and cats to conduct neurological and vision experiments
6. Implanting electrodes into the intestines of dogs to induce motion sickness and vomiting
7. Inducing symptoms of migraines in cats and primates through brain stimulation and manipulation with chemicals

We’ll now consider some experiments that have occurred with Australia over the past few years.

Brain experiments on marmosets
The Physiology Department at Monash University, Clayton, use monkeys in neurological and visual experiments.

In an experiment published in 2007[2], 14 marmosets were held in a stereotaxic frame while visual stimuli were presented on a screen in front of the monkey's eyes and observations made measuring the activity in the brain and cell responses.

In preparation for the procedure, the primates underwent a tracheotomy. The marmosets were placed on a mat and its small head is secured in a stereotaxic frame to hold them completely still. The cortex is exposed and an acrylic wall constructed around the craniotomy is secured with screws. Rods connect the skull to the stereotaxic frame and the marmoset is chemically paralysed and artificially ventilated.

One of the most disturbing things about this experiment is that the experimenters discuss the comparisons between marmoset and macaque monkeys and note the differences between these species and the fact that that the brain of the marmoset is 12 times smaller than the macaque translating into different results. They conclude that the processing of visual motion is at best only 'likely' to translate to the the human brain.

Eye experiments on kittens

The University of Sydney uses kittens as a model for eye disease of premature infants. The disease, Retinopathy of Prematurity (ROP), is a disorder of the retina which can result in blindness.

In one experiment[3] researchers placed kittens aged between one and four days' old with a lactating mother in a chamber (which consists of 60-70% oxygen in the air – normal air contains 20% oxygen) for up to 4 days. The purpose was to observe changes to the cells and blood vessels.

The reason for these experiments, according to the researchers, is that depending on the level of oxygen administered to neonates, the resultant hyperoxia can result in severe vessel constriction and delayed vascularisation.

But according to US human eye specialist Dr Stephen Kaufman, the applicability of the animal model is questionable because the method of induction of disease in the kittens differs from that in humans.

Dr Kaufman says "The research protocol involves "vaso-obliteration" or "localized vessel regression", while in ROP the problem is neither: it involves failure of normal blood vessels to develop in the first place. While the kitten and human condition might resemble each other, even subtle differences in pathogenesis can result in differences in disease manifestation at the cellular level at which these studies are focused".

Feeding ecstasy to rats

In an attempt to recreate the effects of the party drugs MDMA (ecstasy) and methamphetamine (speed) in animals, researchers at the University of Sydney and Macquarie University tried to replicate the lasting social behavioural effects of repeated doses of these drugs in rats.

In an experiment published in 2007[4] rats were injected with these drugs once a week for 16 weeks to monitor them for their reactions.

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2 Lui, L.L., Bourne, J.A. Rosa, M.G.P., (2007) Spatial and temporal frequency selectivity of neurons in the middle temporal visual area of new world monkeys (Callithrix jacchus)' European Journal of Neuroscience Vol. 25, pp. 19780-1972

3 Hughes, S., Gardiner, T. Baxter, L. and Chan-Ling, T. (2007) Changes in Pericytes and Smooth uscle Cells in the Kitten Model of Retinopathy of Prematurity: Implications for Plus Disease

4 Clements, KJ, Cornish JL, Hunt, GE & McGregor, IS, Repeated weekly exposure to MDMA, methamphetamine or their combination: Long-term behavioural and neurochemical effects in rats Drug & Alcohol Dependence (2007) Vol 86 Issues2-3, 12.1.2007 pp 183-190

After 7 weeks the researchers noted a decrease in social interaction. Then to induce stress and depression in these animals they forced them to swim for extended lengths of time.

In their publication, the experimenters acknowledge the already well-known results of using both drugs (ecstasy and speed together) in humans and the severe long- term cognitive behavioural and neurological changes.

Numerous similar projects have been carried out at the University of Sydney.

For example in another project[5] published in 2008, rats were trained to self administer speed from a lever in a high temperature enclosure in an attempt to recreate the heat in dance parties or nightclubs where the drug is often consumed and the ambient temperature is high. In order to self administer intravenously the rats underwent surgery to implant a catheter into the jugular vein and a screw assembly heat mount so that the number of drug infusions and lever presses could be recorded. The results of this experiment were that high ambient temperatures encourage higher levels of drug intake in rats.

Notwithstanding approval of the projects by the university's ethics committee, they were quite clearly inhumane and served no purpose.
Huge amounts of taxpayers' money (via the NHMRC) are expended in these experiments when it could be better spent on awareness campaigns warning people of the already well-known effects of drug use.

Alcohol to sheep

Although evidence shows that consumption of alcohol during pregnancy impairs the fetus and leads to lifelong facial and brain abnormalities in the child, researchers at the Research Centre for Reproductive Health at the University of Adelaide (in conjunction with the Department of Physiology, Monash University) have been attempting to mimic binge drinking in pregnant sheep to observe the results in the unborn lamb[6].

Pregnant sheep were infused intravenously with ethanol (alcohol) and compared to control sheep. The researchers observed a reduction in fetal weight in the sheep administered with ethanol.

Fetal Alcohol Syndrome (FAS) is a lifelong disorder caused by prenatal alcohol exposure and the most common preventable cause of birth defects and brain damage in children.

Sadly there are children in Australia who suffer the neurological effects of FAS and there are women who continue to binge drink whilst pregnant. The researchers themselves acknowledge in their publication that they were already aware that chronic ethanol consumption in pregnant women reduces birth weight and further that the 'sensitivity of fetal growth to ethanol may vary between species'. One then wonders what the point of such an experiment was.

Why we need to focus on replacements rather than welfare

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[5] Cornish, JL, Clemens, KJ. Thompson, MR, Callaghan, PD, Dawson, B & McGregor, IS, High ambient temperature increases intravenous methamphetamine self-administration on fixed and progressive ratio schedules in rats J Psychopharmacol (2008) 22(1) 100-110

[6] Gatford, K.L., Dalitz, PA., Cock, M.L., Harding R, Owens, J.A. (2007) Acute ethanol exposure in pregnancy alters the insulin-like growth factor axis of fetal and maternal sheep. Am J Physiol Endocrinol Metab 292: E494-E500

How were these animals treated with utmost respect? Was their use really absolutely essential? Were there really no alternatives? How did these experiments conform to our code of practice – a legal document that's intention is supposedly to protect animals? And how were they ever justified by an ethics committee?

To quote Gary Francione, "Not only have welfarist reforms not moved society closer to the abolition of violence toward animals, but animal exploiters often point to welfarist reforms to defend their activities and to seek public support for continued reform. Nowhere is this more apparent than in animal experimentation."[7]

The scientific arguments

It's becoming increasingly acknowledged by researchers that data obtained through animal tests cannot be extrapolated to humans with sufficient accuracy. Species specificity is a function of differences in absorption, metabolism, excretion, gestation periods and a host of other common biological functions."[8]

Secondly, animals are unable to describe their experiences such as nausea and headaches which are common side effects of drugs.

And finally, animal tests are nearly all short term, and some chemicals make take the length of a human life to produce their delayed effects." [9] Consider DES as an example.

DES (Diethylstillbestrol) for example, was a synthetic estrogen prescribed to pregnant women to prevent miscarriage. Its use resulted in increased spontaneous abortions, premature births and neonatal deaths and an increased risk of vaginal cancer in daughters and even granddaughters of users. The drug was of course 'successfully' tested on animals prior to its release.

The thalidomide tragedy is probably the most well-known example of how animal experiments have been misleading. This drug, that was intended to prevent morning sickness, resulted in tens of thousands of children born with severe deformities such as missing limbs.

While thalidomide is a well argued case however, it is certainly not a one-off example. Opren, Clioquinol, TGN 1412 and Vioxx provide a small snapshot of similar occurances. ADRAC (Adverse Drug Reaction Advisory Committee) are continually issuing warnings and monitoring serious and unexpected side effects of drugs that have passed animal tests.

According to the FDA's website, it's been estimated "that only 5 in 5,000 compounds that enter preclinical (animal) testing make it to human testing, and only 1 of those 5 may be safe and effective enough to reach pharmacy shelves."

The FDA is one of the leading regulators of animal testing and requires the use of at least two species to "prove" the efficacy of drugs. Ironically, their website also states:
"Two or more species are typically tested ***because a drug may affect one differently from another***."

Conclusion

While photos and arguments appear old, they remain just as relevant today.

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[7] Francione, G. Animal Rights and Animal Welfare, 48 Rutgers L. Rev. 397 (1996)
[8] Sidney Gendin, The Use of Animals in Science. P.203
[9] Ibid

Despite the development of the supercomputer, human tissue banks, the synchrotron and the many alternative technologies that have proven to be far more efficacious than animal experiments, some researchers continue with this inhumane and archaic methodology. I saw quoted in the Bulletin some time back, that researcher's reluctance to change is because "careers are more easily advanced by sticking with accepted paths even when they may be wrong."

Sadly, we have progressed little since the days and attitude of Rene Descartes who convinced the scientific community that animals are mere automata – reacting like clockwork and having no feelings.

There is no reason for us to focus on the emotional aspects of animal experimentation nor exaggerate the suffering. The mere term “animal experiments” speaks for itself - automatically conjuring up images of pain and suffering. This emotion is what I consider to be our subconscious informing us that the practice is morally wrong.

Instead, all we need do is continue to provide a factual basis for why the practice is scientifically flawed. I believe there will come a time when our species will eventually realize that our use of animals as research tools is immoral and reprehensible. It’s up to us to ensure that that time comes sooner rather than later – for the sake of animals and for humanity.