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THE PHILOSOPHY OF THE OPEN SCHOOL OF TROPICAL ANIMAL SCIENCE AND PRODUCTION

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ABSTRACT: The paper begins by attempting to acknowledge as many of those persons and organizations worldwide who or which contributed output and activities that helped in the distillation of ideas that helped to formulate this school of thought. The paper also outlines the four (4) assumptions underlying the philosophy of the “Open School of Tropical Animal Science and Production” (OSTASP), and the six (6) elements of the Philosophy. The Mission Statement of the OSTASP is “To contribute towards the continued production, utilization and conservation of Tropical Animal Resources for the benefit of humanity”. The Membership of the OSTASP would consist of 1] The Founders [Garcia and Archibald], 2] Foundation Scholars, 3] Scholars, 4] Fellows, 5] Associates, 6] Student Members, 7] Cooperate Members, 8] Institutional Members, 9] Farmer Members, and 10] Ordinary Members. The Suggested Approach of the OSTASP will have the following elements:

- (i) an increased dialogue between in situ and ex situ wildlife conservation efforts (the bringing together of the different human elements, the advancing of the humanizing project = the Trialectic);
- (ii) the intensive production of species with the potential for domestication;
- (iii) the utilization of animal biotechnology for the conservation of useful genes from within the existing wildlife gene-pool;
- (iv) the expanded research into the anatomy (digestive and reproductive), health and husbandry of wildlife species;
- (v) the development of an International Network on Wildlife [Non-domestic animal] research and development, which would include Zoos, Conservation Parks, Universities, Research Institutions, and Private Collections; and
- (vi) the use of the CGIAR International Plant Genetic Resources Institute (IPGRI) Network Model could be used as the basis for setting up the Tropical Animal Science Integrated Network [TASIN].

In order to give the OSTASP life all members would be invited to belong to a Web Based Community. Within this community network members could then be of service to each other while we collectively attempt to advance the Mission of the OSTASP, which is “To contribute towards the continued production, utilization and conservation of Tropical Animal Resources for the benefit of humanity”

BACKGROUND

The purpose of this paper is to outline the philosophy behind the OSTASP. All philosophical introspection has always first begun with a question. The question that will now be posed would be: “Why is it necessary in the year 2001 to address the issue of Tropical Animal Science and Production from a philosophical perspective?” This could be the subject of a very scholarly debate but we do not have the luxury of time and space in which this could be done. One could, however, first choose to begin at the very beginning by attempting an answer for “What is Science?” This can be seen as the study of

matter and things using the empirical method approach to arrive at universal truths. Modern man has further classified Science into Basic Sciences, Applied Sciences, and Social Sciences. Descriptions of these have now all become axiomatic, so there is no need to elaborate further. Agriculture is an Applied Science [which includes Animal Science as a discipline]. As an Applied Science it attempts to apply the knowledge of the Basic Sciences towards the production of food and utility for mankind from plants and animals, and for the maintenance of the environment in a sustainable manner. It, however, also has to draw very heavily on the knowledge generated from the Social Sciences as it has to do with the economics of the production process, religious attitudes towards the production and use of foods, and social policy formulation as it pertains to food production, human nutrition, poverty alleviation, and human well being. Therefore, one could and quite possibly have encountered “Agricultural Experts” who are Agricultural Economists or Sociologists, and Rural Development Specialists but who may have very little expertise in the production side of the Applied Science.

In other words they are “Social Scientists” who are being asked to make decisions and give advice about an “Applied Science” for which they have neither been trained nor were they equipped to deal with. It is critical that we address this at this junction in history, with the overtones and primeval emphasis of “Globalization”. Thus the Assumptions and Philosophy of the St Augustine School of Tropical Animal Science and Production must be resonantly articulated. One has attempted to crystallize this school of thought that was the result of work done with, and discussions held by the authors with many people during the period 1975 to 2001. Some of these thinkers and doers are too numerous to mention and time and space does not permit. This, however, would be done in the expanded version of this paper.

THE ASSUMPTIONS OF THE OSTASP

The Assumptions are as follows:

- I] the maintenance of Tropical Animal Biodiversity is essential for the well being of humankind on earth;
- II] Tropical Animals have been selected by nature to be adapted to Tropical Environments;
- III] there are five (5) factors governing the production of any species of animals or livestock and they are as follows:
 - 1) Nutritional and Feeding Factors
 - 2) Breeding, Genetics and Reproduction Factors
 - 3) Health and Disease Factors
 - 4) Environmental Factors
 - a) The Physical Environment (Housing)
 - b) The Social Environment (other animals) and
 - 5) The Economic and Marketing Factors; and
- IV] all animal species can be produced using a Systems of Production Modeling Approach [Figure 1].

THE PHILOSOPHY OF THE OSTASP

The elements of the Philosophy are as follows:

- 1] the concept of the intensification of production is necessary whether in situ or ex situ;
- 2] the use of the Systems of Production Modeling Approach has the features as described in Figure 1.
- 3] Animal Production should be based to the greatest possible extent on the use of the local and available feed resources;
- 4] seek to understand the factors affecting animal production for each species being studied; in the case of new species, first attempt an understanding of the anatomy and functioning of the Digestive and Reproductive Systems;

- 5] "Production Systems" should be intensive in approach and integrated in nature, seek to find complementary animals and plants; and
- 6] "Systems of Production" must encourage plant and animal diversity.

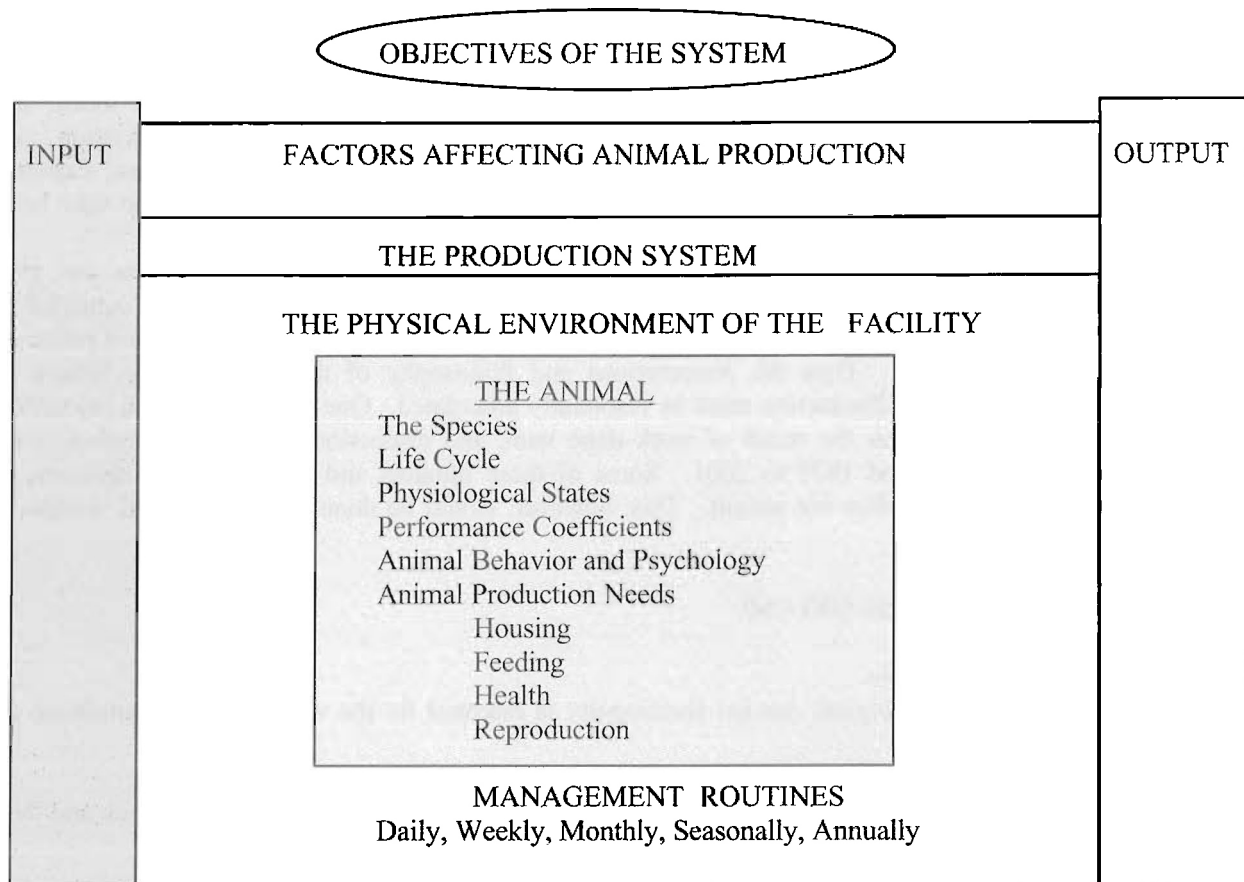


Figure 1. Concepts for developing an animal production system for any species.

THE WAY FORWARD BEYOND THE YEAR 2001: HOW SHOULD PEOPLE WHO SUBSCRIBE TO THE OSTASP PROCEED

Intensification for the development of this school of thought:

This concept of intensification involves the bringing together of many animals into a single location, or within close proximity to each other with the problems attendant on increasing animal population densities. In the extreme situation of ex situ intensification implications of the above are that animals have to be fed and watered with timely waste removal; preventive techniques have to be instituted to avoid the introduction and rapid spread of diseases; animals' social behavior need to be considered; provisions have to be made for the animals' social needs to be met; and the design of the housing plays a key role in facilitating all of the above.

Approaches at Developing Intensive Animal Production Systems:

A philosophical approach that is being suggested for the developing and planning any system is based on two elements:

- 1] an understanding of the factors affecting animal production and
- 2] the physiological states of the animal species in question.

What must be noted is that there exist an interaction between the above two; and this interrelationship will determine the nature of the production system. The reason for this is that at each physiological state, the effect of each factor is different OR the needs of and the threats to the animals' survival will be different.

In developing an Intensive Production System its objectives must be clearly established from the start to identify which physiological states should be included in the model. The source of the animals for the production system to be established will also need to be identified as follows: wild caught captive breeders; wild caught juveniles for growth or the management of all physiological states. The modern day poultry industry reflects the success that this industry has had with this type of approach. In the North American Dairy Cattle Sector, over the last twenty years we have seen an evolution from all production units being contained on one farm to the development of large and very specialized farms made up of only one production unit, which manages therein only a very narrow range of physiological states. This has seen the decline of the Family Dairy Farm and the expansion of the specialized production units with cooperate structures of management in which thousands of cows are milked three times per day. It is not being suggested here that we emulate this in the Developing Tropical World, but what is being suggested is that lessons can be learnt from the production and business principles evolved and employed.

In the Developing Tropics it is the Dairy Goat that holds the greatest potential for expansion [Knights and Garcia, 1997]. Never the less there is an abundance of Tropical animal species which are on the verge of domestication and to which one should address attention. A short list is as follows:

Eland (*Taurotragus oryx*), Capybara (*Hydrochaeris hydrochaeris*), Agouti (*Dasyprocta leporina*), Collard Peccary (*Tayassu tajuca*), Paca (*Agouti paca*), Iguana (*Iguana iguana*).

The reality is, however, that the Tropical Animal Scientists working in the Tropical Developing Countries [wherein are the repositories of the abundant animal genetic material] do not have the resources, financial and otherwise, to accept the challenge. Globalization and its consequent decrease in research support from small states, has found them not looking after their own interest in exploiting their biodiversity. This is also helping to make this unfortunate situation even worse.

THE NEW HORIZONS

The complementary activity of the in situ and ex situ conservation techniques will pose the new challenges for Tropical Animal Science [TAS]. The major challenges will lie in the intensification of production activities in both the in situ and ex situ conservation situations. It is for this reason that a Tropical Animal Science Integrated Network (TASIN) is being suggested as a component of the OSTASP. It is envisioned that this network could be funded and function in a manner similar to the International Board for Plant Genetic Resources (IBPGR). The first task of the OSTASP would therefore be to get this network going by any means necessary. The nature of the network linkages and the general expected outputs are presented in Figure 2. This would afford a better opportunity for the two conservation camps to interface and have constructive dialogue with all the stakeholders in Tropical Animal Science, [Domestic Livestock (Food, Companion and Laboratory Animals/ animals at different points in the productivity and utility to humanity continuum); Animals on the verge of Domestication; and Wild Animals]. TASIN was first suggested by Garcia (1999).

The future horizons for Tropical Animal Science and Production lies:

- [1] in getting a better understanding of this wide range of under-utilized non domesticated tropical animal resources and
- [2] in creating synergisms from the efforts of the 2300 Zoos world wide [the ex situ conservation and research efforts] and the 4000 plus nature reserves worldwide [the in situ conservation efforts].

This work has already started through the initiatives of Darwin, and with the formation of societies such as the London Zoological Society in 1828 and the Smithsonian Institution. These institutions have laid the groundwork for Tropical Animal Science, which is still in its infancy as we know it today both in the Developed and Developing countries. This is because those persons who have been working in Animal Science in the Tropics have focused mainly on the exploitation of Dairy and Beef Cattle (*Bos taurus*, *B. indicus*) for beef and milk, sheep and Goat (*Ovis aries* and *Capra hircus*) for mutton, chevron, and milk; chickens (*Gallus domesticus*) for eggs and meat; turkeys (*Melagris gallapavo*) for meat and plumage; Ducks (*Anas platyrhynchos*) for meat; Horses (*Equus caballus*) for work and enjoyment, Dogs (*Canis familiaris*) and Cats (*Felis catus*) for companionship. Thus Animal Science has focused mainly on 10 species of animals.

In order for Tropical Animal Science to fully blossom, 'blinkers' would have to be removed, our Eurocentric approach to Animal Science would have to be changed and greater dialogue between the in situ and ex situ approaches to animal conservation, management and production must be engaged. Blaut (1997) has suggested that this "Eurocentric diffusionism" has contributed to the current lack of success and overall development of tropical agriculture and has contributed to the destruction of small holder agriculture in Puerto Rico and the United States Virgin Islands. One should take note of this and avoid it having a negative effect on the future of Tropical Animal Science that is still in its infancy. Hence those who subscribe to the thinking of the OSTASP would agree that there is a need to view Tropical Animal Science and Tropical Livestock Development from a different perspective, if the science is to be advanced. A move possibly from "Dialectical" thinking to "Trialectical thinking (critical thinking in the light of advancing the humanizing project)" as has been suggested by the late Dr Herb Addo in the last paper he wrote before he left this life (Addo, 1996).

THE SUGGESTED APPROACH OF THE OSTAS&P

This new approach should have the following elements:

- (i) an increased dialogue between in situ and ex situ wildlife conservation efforts (the bringing together of the different human elements);
- (ii) the intensive Production of Species with the potential for domestication;
- (iii) the utilization of biotechnology for the conservation of useful genes from within the existing wildlife gene-pool;
- (iv) the expanded Research into the anatomy (digestive and reproductive), health and husbandry of wildlife species;
- (v) the development of an International Network on Wildlife [Non-domestic animal] research and development, which would include Zoos, Conservation Parks, Universities, Research Institutions, and Private Collections; and
- (vi) the use of the CGIAR International Plant Genetic Resources Institute (IPGRI) Network Model could be used as the basis for setting up the TASIN as suggested in Figure 2.

MEMBERSHIP TO THE OPEN SCHOOL OF TROPICAL ANIMAL SCIENCE AND PRODUCTION

Membership to the OSTAS&P would be as follows:

1. Founders [Garcia and Archibald].
2. Foundation Scholars, those who have contributed to the teaching in the degree, M.Sc. in Tropical Animal Science and Production. UWI,
3. Scholars, persons who in the opinion of the Founders and Members of the School have made a significant contribution to Tropical Animal Science and to concepts in developing this school of thought.
4. Fellows, all graduates of the M.Sc. Programme in Tropical Animal Science and Production, and M.Phil in Livestock Science, UWI.
5. Associates, all graduates with a B.Sc. in Livestock Production, UWI.

6. Student Members, all students registered in the M.Sc. in Tropical Animal Science and Production, or M.Phil in Livestock Science or Ph.D. in Livestock Science, UWI.
7. Cooperate Members, Companies which would like to advance the mission of the OSTASP through their support in cash or in kind.
8. Institutional Members, Institutions which would like to advance the mission of the OSTASP through their support in cash or in kind.
9. Farmer Member, Farmers who in the opinion of the Founders and Members of the School support the Mission of the OSTASP through their active support and practices.
10. Ordinary Member, any persons who in the opinion of the Founders and Members of the School support and contribute towards the Mission of the OSTASP.

HOW THE OSTASP WILL FUNCTION

In order to give the OSTASP life all members would be invited to belong to a Web Based Community. Within this community network we could then be of service to each other while we collectively attempt to advance the Mission of the OSTASP.

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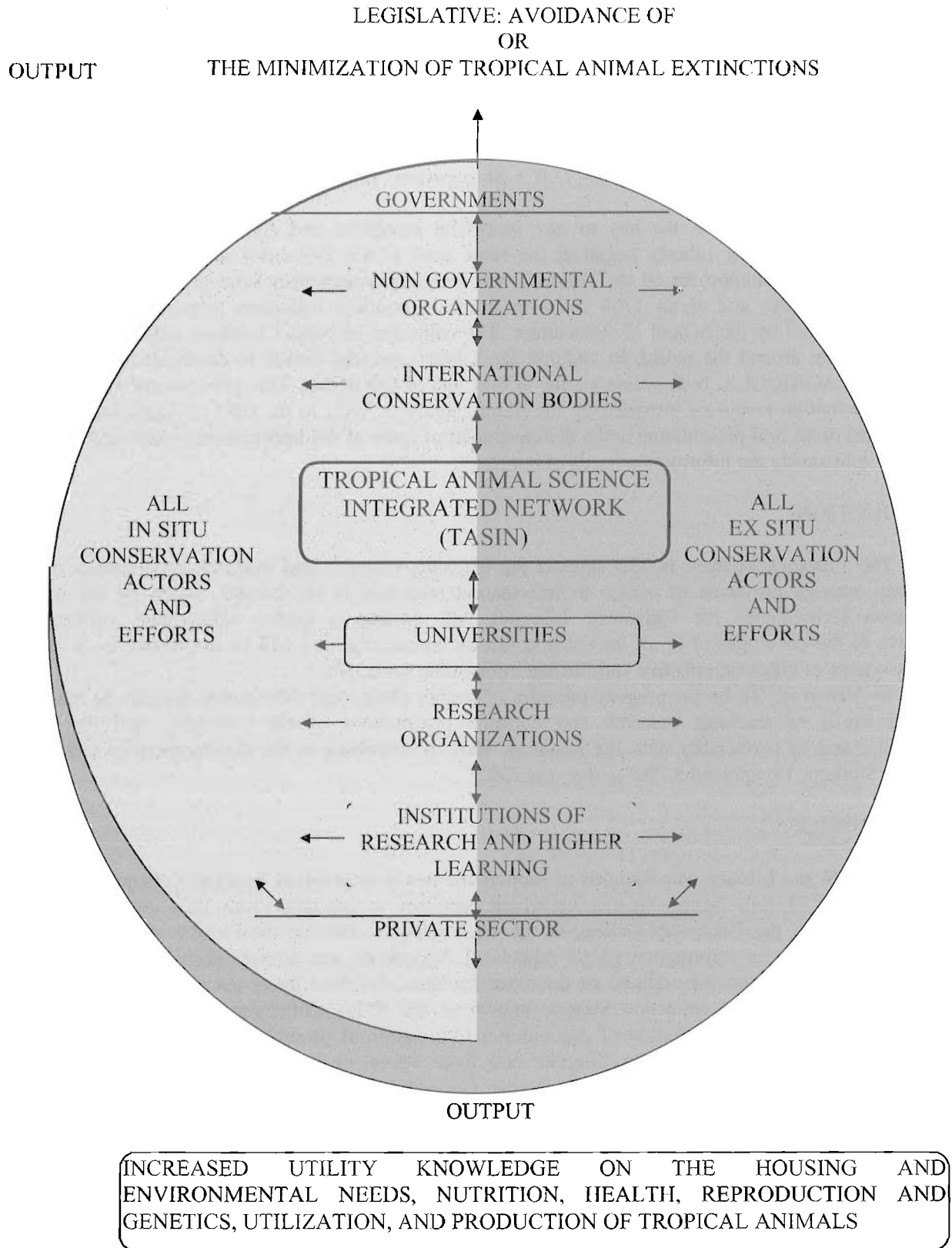


Figure 2. A conceptual framework for the formation of a Tropical Animal Science Integrated Network (TASIN).