

Integral Ecology, Women and Entomology in the 19th Century

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Summary

In this paper, I discuss the rationale and thinking behind my research on women entomologists in the 19th century, drawing from the concept of integral ecology as presented in *Laudato Si': On Care for Our Common Home*, and two separate works of Pierre Teilhard de Chardin, *Letters to Léontine Zanta* and *On love & happiness* to further my arguments.

This paper is divided into two parts, with the first part dealing with the undercurrents of my research, more precisely, the works, philosophical and ethical ideas that steered me towards my topic, which deals with human and insect relationships, and the implications of the nature of these relationships ecologically.

The second part of the paper is divided into two parts, with the first section dealing more concretely with the various aspects of my research, such as the significance of the 19th century as the period to explore my topic, and in the latter half, discussing why I decided to look at my topic through the perspective of women, or rather women entomologists.

This paper does not delve deeply into the contents of my research, as I am still in the preliminary stages of writing. However, it does touch on some of the themes that I will explore in my research, such as the benefits of a holistic and interdisciplinary approach to acquiring and sharing knowledge, an idea that corresponds well with the concept of integral ecology, and, a practice, I argue, that was in some aspects more prevalent in the 19th century than it is today.

The final part of the paper focuses on the positioning of myself, in regards to my experiences, history and gender as a researcher, into my work, which is based on some of the qualitative research design ideas presented by Creswell in the 3rd edition of *Qualitative inquiry and research design: Choosing among five approaches*.

Part I

Integral ecology calls for openness to categories which transcend the language of mathematics and biology and take us to the heart of what it is to be human. ("Laudato Si' (24 May 2015) / Francis")

Heather Swan, a lecturer in environmental humanities and literary studies at the University of Wisconsin-Madison penned a fascinating essay in aeon magazine entitled; *The Sorrow of Bees*, which she very concisely introduces, and summarizes in the following two sentences: "Scientists torturing bees to save them have nightmares about the work. Must grief be part of experimental design?" (Swan, 2014).

Swan's essay, I can confidently state, played a significant role in propelling me towards my own research of looking at women entomologists in the 19th century, not because she herself explores the works of an entomologist (Sainath Suryanarayanan), whose research on paper wasps necessitated the continuous 'puncturing' of live baby wasps to extract blood, and later the very slow poisoning of bees with neonicotinoid-class pesticides to see how it affected their health, but because, while describing these standard scientific procedures, she does something that is often neglected, or overlooked.

Swan pulls the humanity back to the scientist by describing Suryanarayanan's 'immense' suffering, brought on by the procedures he had to perform on the insects, but she also goes on to highlight the suffering experienced by the insects themselves, actual and as perceived by the researcher (as controversial, or 'blasphemous', to use her own words, as this idea would still be to many). Swan asks "...could insects feel emotional angst?" to which Suryanarayanan replies, and to which she agrees; "I didn't prove it, scientifically...but I could feel it. Of course they suffer...They suffer." (Swan, 2014)

Further on in the essay, Swan describes research conducted by a zoologist named Melissa Bateson, the findings of which suggested what could be seen as the exhibiting of emotion by honeybees. This serves as a supplemental and scientific answer to the question she had raised earlier (above). But what has all this to do with my research on women entomologists in the 19th century I assume would be the question that naturally arises at this point, and I will explain this below, drawing from the private correspondences and other works of Pierre Teilhard de Chardin, and the concept of integral ecology to strengthen my argument.

In a very broad sense, Swan's essay explores human and insect relationships. She concludes her essay by discussing a transdisciplinary approach, launched in part by Suryanarayanan, to saving bees without the need for torture. It is a holistic approach that draws on the knowledge sets and emotional links of different stakeholders towards bees, such as beekeepers, entomologists and humanitarians. Similarly, my research will also look at human and insect relationships, albeit through a historical lens.

The significance of looking at such a relationship, which Swan very successfully accomplished, and which I hope to accomplish with my research, is that it raises some important questions that need to be asked. In Swans case, questions that revolve around the ethics of how we treat insects, or rather invertebrates, especially when compared to the rights and protections now afforded to vertebrates that are utilized in scientific pursuits. However, the 'disputable' suffering of the insect, that would form a large part of the ethical argument aside, she also raises awareness on

how the way we treat other beings affects us, as humans, and why it is important to not separate, or overlook, in our scientific endeavors, our humanity.

In light of not neglecting the human behind the research, these questions are what stirred my passion towards my topic, and driving this passion is an empathy, that would very likely not be considered scientific, for the indiscriminate suffering we inflict on the smaller beings such as insects, through for example, our use of insecticides and other harmful chemicals, and how easily, and coolly we make the decisions to kill, squish beneath our fingers, or stomp for no apparent reason, or tolerate the collateral deaths of other insects that were not even the targets of our pesticide use.

Despite the fact that my feelings of empathy are based on ideas that would currently not be accepted scientifically, and in fact may be frowned upon by a wider audience even outside the domains of science as being a bit too romantic, I feel that I remain justified in my feelings, just as I felt that even without Swan's explanation of Bateman's findings, she had already made a strong case through Suryanarayanan statement, "I didn't prove it, scientifically...but I could feel it", and why I believe this has been summed up perfectly in the *Encyclical Letter, Laudato Si*, in which Pope Francis, discussing Saint Francis of Assisi in the light of integral ecology states that:

Francis helps us to see that an integral ecology calls for openness to categories which transcend the language of mathematics and biology, and take us to the heart of what it is to be human. ...His response to the world around him was so much more than intellectual appreciation or economic calculus, for to him each and every creature was a sister united to him by bonds of affection. That is why he felt called to care for all that exists...he would call creatures, no matter how small, by the name of 'brother' or 'sister'" ...Such a conviction cannot be written off as naive romanticism, for it affects the choices which determine our behaviour. If we approach nature and the environment without this openness to awe and wonder, if we no longer speak the language of fraternity and beauty in our relationship with the world, our attitude will be that of masters, consumers, ruthless exploiters, unable to set limits on their immediate needs. By contrast, if we feel intimately united with all that exists, then sobriety and care will well up spontaneously.

("Laudato Si' (24 May 2015) / Francis")

I do not in any way mean to dismiss science, in fact I embrace science with open arms, and acknowledge how much it has defined and helped us advance as a society, and as individuals, but it's very important to also remember that it is not all that defines us, and that the other aspects of ourselves, those which evolution has endowed us with, which tell us of our humanity, and our links to nature, that we are a part of nature, such as having feelings, feelings for example of empathy (shared with other species), these should have an equal authority as science as we move forward, because science has no feeling of its own, if we separate our humanity from it, then what will guide it to a use that benefits the human that is a part of nature, and therefore, all of nature itself. Returning to the encyclical to further my point, Pope Francis (2015) argues that leaving it to science and technology to shape our lives and societies is a form of 'reductionism' that has led to the deterioration of our environments.

Pierre Teilhard de Chardin in his *Letters to Leontine Zanta* makes the observation, which I believe is very relevant to what I have discussed up until this point, when he says:

The fundamental evil that besets us, and I think it is fundamental because it is the lack...of the virtue or quality needed for our progress at this moment is our incapacity to see the whole. Add this way of seeing things to the most disquieting tendencies of our time, and they would be changed into magnificent virtues. (Chardin, 1969)

Indeed, this is so, as Swan (2014) also displays in her essay, when the study of the bees was approached in a more holistic manner, pulling in various human stakeholders and utilizing their

knowledge, and their various relationships and emotional connections with the bees, progress was made without inducing suffering. An ethically questionable and disquieting practice was turned into a magnificently virtuous endeavor.

To conclude this first part, that deals mainly with the undercurrents of my research, my sources of inspiration and the various ideas that give meaning to my work, I draw again from Chardin (1969) on his reflections of happiness in *On Love and Happiness*, when he says, “we must...through some medium that gradually reaches further afield (a line of research...an idea, perhaps...) transfer the ultimate interests of our lives to the advancement and success of the world we live in.” (Chardin, 1984). While I am unsure when one can actually state what has been the ultimate interest of their lives, I can at least say that at this current time in my life, research on human and insect relations is of great interest to me, and the implications of this kind of research, if approached correctly, can definitely contribute to the ‘advancement and success of the world we live in’.

Insects are abundant, they are everywhere, interacting with us in almost every aspect of our lives. They live in our homes, at times on our bodies, they are both destructive and beneficial in the production of our food, they are at times our source of food, or else the producers of it, they permeate our literature and art, they have influenced and shaped our history in so many ways, and one does not have to go far to encounter an insect. So if we could understand them better, if we were able to perceive them in a different light, embrace them in a different manner, it could have huge implications for our environment, even if our greater awareness of them only meant that we were more cautious, for example, of the chemicals we put into our ‘common home’.

After all:

If we and the rest of the backboned animals were to disappear overnight, the rest of the world would get on pretty well. But if they were to disappear, the land's ecosystems would collapse. The soil would lose its fertility. Many of the plants would no longer be pollinated. Lots of animals, amphibians, reptiles, birds, mammals would have nothing to eat. And our fields and pastures would be covered with dung and carrion. These small creatures are within a few inches of our feet, wherever we go on land - but often, they're disregarded. We would do very well to remember them. (Attenborough, 2005)

Part II

It can be said that many problems of today's world stem from the tendency, at times unconscious, to make the method and aims of science and technology and epistemological paradigm which shapes the lives of individuals and the workings of society. The effects of imposing this model on reality as a whole, human and social, are seen in the deterioration of the environment, but this is just one sign of a reductionism which affects every aspect of human and social life. ("Laudato Si' (24 May 2015) / Francis")

Having already discussed the undercurrents of my research, I will now move on to the second part of this essay, in which I will attempt to cover, quite generally, some of the other aspects of my research, linking them, as above, to the works of Chardin and the concept of integral ecology. To begin with I will discuss why I decided on entomology in the 19th century, and finally, why I decided to explore it from the perspective of women entomologists.

The 19th century was an interesting time for science, it was a time of transition, and growth that saw the “proliferation of new sciences and sub-sciences” (Chapple, 1986). It was also in this period that entomology rose into a specialist discipline and really took off in Britain following

the publication of *Introduction to Entomology* by William Kirby and William Spence (Clark, 2009). However, beyond the professionalization of entomology in the 19th century, there was also a wide fascination with insects amongst the British public, and this can probably be attributed to the fact that the 19th century was part of the romantic era, an era in which nature frequently surfaced in the arts, sciences, and literature, but also because, according to (Clark, 2009) insects were “a favorite subject of natural theologians” due to their abundance and diversity, making them an ideal subject to strengthen “the arguments from design that bound together science and religion” (Clark, 2009). William Kirby (above) himself, considered the founder or ‘father’ of entomology was a country priest.

Another feature that made the 19th century an appealing time frame for my research is that scientists were expected to write not only for the specialist but for ‘a much wider audience’¹. According to (Chapple, 1986), the great reviewing journals of the day prepared “lengthy surveys...for the public at large”, and in fact Chapple highlights how one could go from reading a critique on “poems by Alfred Tennyson in the April 1833...Quarterly Review to Whewell’s urbane assessment of Mary Somerville’s Connexion...without feeling...they were moving to a different kind of discourse”. Chapple continues by bringing to light that in fact many of the periodicals were “the original source for both literary and scientific texts”.

One more feature of this century that captured my interest is that this was an age of polymaths, your scientists were your poets and your poets your scientists. Many works were produced from amongst the more famous poets, Byron, Tennyson, Coleridge...that integrated science into their works, to the somewhat more obscure scientists that took to creating poetry based on science. Their works were inspired from multiple disciplines ranging from chemistry, physics and biology to astronomy, paleontology and psychology. *The Honey Bee: A Lesson in Philosophy* by Alexander Harvey is perhaps a good example, while also quite appropriate to the topic of my research:

*How doth the little Bee
Befool some men of note
Their logic shake, their “laws” unmake,
Their “data” turn to nought.*

*They say – good Isaac Watts! – they say,
That that which feels and wills,
In man or dog, is Brain in act –
A product it distils.*

*That Brain is Mind – its source – its gauge,
These savans teach and hold;
That love and joy, and grief and woe,
Are from its cells evolv’d*

*The Honey Bee within her hive
Such teaching laughs to scorn;*

¹ 19th Century Collections Online, overview of Science, Technology, and Medicine: 1780-1925, Part II

*Go, ask of her, sage Ph.D's
If Mind of Brain is born?*

*A Mind she has, a will and choice
But not a Brain has she:
Insight and foresight, taste and skill,
Possess this brainless Bee.*

*Just take your knife and glass, - dissect
And search her every atom;
Of brain you'll find not e'en a trace
On which to fix a datum. (Harvey, 1868?)²*

I give an example of the combination of science and poetry as it is a rather dynamic pair. However, the polymaths of the 19th century acquired very wide and varying sets of knowledge and skills, “many Romantics did more than just scribble or chat about diverse domains of knowledge; they were “devoted to the pursuit of knowledge” and sought or possessed “great or varied learning”” (Ross, 2011). Ross (2011), highlights how during the romantic period, “the willingness ‘to try all things’”, to explore and discuss topics ranging from mathematics to poetry, medicine and politics was a lot more common than it is today.

Almost every description I have provided above as a reason as to why the 19th century as a time period for my research revolves around a particular type of behavior or activity that was a lot more common then than it is now, and that we should or already are striving back towards. The fact that this was the period when entomology really gained its popularity merely gives a logical purpose to looking at this time frame, but the intermingling of the disciplines, the writing of science for the general public, the encouragement of the polymath, the collaborations between science and religion, these all attest to a very holistic approach to the accumulation and distribution of knowledge, an approach that was respectful not only to the specialist but also to those outside this sphere.

This type of approach also made it very inclusive, “scientific knowledge was not the preserve of a special class. Neither the lack of a formal education nor that of an early scientific education could prevent intelligent men and women, like Faraday³ and Somerville⁴, from contributing powerfully to its advancement.” (Chapple 1986).

If we return briefly to the concept of integral ecology, Pope Francis in his encyclical really pushes forward the point that, what we need today in light of the complexity of our environmental problems is a multi-disciplinary and flexible approach, he states:

Given the complexity of the ecological crisis and its multiple causes, we need to realize that the solutions will not emerge from just one way of interpreting and transforming reality. Respect must also be shown for the various cultural riches of different people, their art and poetry, their interior life and spirituality. ("Laudato Si' (24 May 2015) / Francis")

This unification of so many varying groups of people through knowledge in the 19th century, I'd argue, played a significant role in one other very important aspect I raised earlier, and which is of significance to my research; the widespread fascination with insects (at least amongst the British

² The first six of 29 verses from: *The Honey Bee: A Lesson in Philosophy* by Alexander Harvey

³ See Michael Faraday

⁴ See Mary Somerville

public), something that is lacking today⁵, and also a goal, as I mentioned earlier, that I hope to accomplish through my research, even if only in a small way, as Chardin (1984) advises “we have only to do what anyone of us is capable of to become conscious of our living solidarity with one great Thing, and then do the smallest thing in a great way. We must add one stitch, no matter how small it be, to the magnificent tapestry of life...”.

So the 19th century really provides the ideal setting for me to look at in terms of what I wish to accomplish with my research, because the particular behaviors of that time period, the holistic approaches to knowledge, and the sharing of knowledge, as I mentioned previously, are I’d argue, the mechanism that led to the widespread fascination with insects, and that is something we can definitely learn, or remember from. Tom Turpin, a professor of entomology at Purdue University wrote a small posting lamenting the fact that books on insects, even when written for a general public, fail to make it onto our contemporary best-selling lists, and interestingly, he brings up the hugely popular entomological works of the 19th century naturalist Jean Henri Fabre (Turpin, 2006).

Jean Henri Fabre is a perfect example to conclude the reasoning behind my choice to research entomology in the 19th century. By today’s standards, by the limitations we have put on tapping potential, through our expensive learning institutions, the isolation and exclusivity of the ‘specialist’, our ideas on who is worthy to be given respect as an authority, would we have ever seen the works of a man such as Fabre, a self-taught man from a life of poverty? Of course this is very speculative, but I believe it’s worth thinking about, because today we have constructed so many artificial walls determining who, how and what are the ‘respected’ ways to acquire and share knowledge that are very limiting, perhaps we would have still been graced with Fabre’s works, but would his beautifully poetic style of writing, that welcomed the general reader and introduced them in an appealing way to the world of insects, taken away from his scientific authority? While I have diverged a bit, we can learn a lot from these differences in structure of the two times, and we can apply this learning broadly, or, as in my case, to understand in more depth, a more specific issue.

Moving in to the final part of this essay, I will discuss why I chose to approach my research from the point of view of women entomologists. Creswell (2012) in his book: *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* makes the observation that “the best qualitative studies present themes analyzed in terms of exploring the shadow side or unusual angles.” I think in terms of the 19th century, and who we considered the scientists of that time, looking at women that practiced science (to the extent that they were permitted) provides quite an interesting and unusual angle for my research.

In the mid-eighteenth century, so coming in to the period with which I am concerned, there were actually, “a remarkably high proportion of women in the field of entomology” (Landry, 2000). I think that’s really fascinating, especially in light of the fact that only recently (Rosen, 2012) wrote in the *Cornell Chronicle* of the lack of women in entomology following WWII, this despite the fact that “women have made significant contributions to the field of entomology as far back as the 19th century” when one would imagine there would be more limitations imposed on women in the academics. So perhaps our girls today need a little reminder of these great women, and these women, although posthumously, deserve more of the recognition they are due.

5. www.agriculture.purdue.edu/agcomm/newscolumns/archives/OSL/2006/July/060727OSL.htm#.WDzfY6J97fb as an example.

Another factor that influenced my decision to look at women and their relationships with insects is something that Rosen (2012) highlights, which is the socialization of girls today “to express disgust for creepy-crawly things” which she believes occurs somewhere in middle school. While I assume this data speaks of an American demographic, I think it safe to assume that it can be applied quite broadly. So taking this into consideration, it will be very interesting to explore, through my research, how women were socialized to insects in the 19th century, leading to, rather than a loathing for ‘creepy-crawling things’, larger numbers of women, and great discoveries within the field of entomology.

I think as a final point on why I adopted this angle in regards to my research again goes back to Creswell (2012) in his discussions on the characteristics of ‘good qualitative studies’, and one of these characteristics he argues, has to do with the positioning of the researcher within the study. He states that reflected in a good qualitative study, should be the “individuals’ culture, gender, history and experiences” and that these “shape all aspects of the qualitative project”, or I would argue, they are what give it life.

As a woman myself, that grew up in Africa, if there is one thing that I wish I had been exposed to more of in my childhood, and this is a thought that only recently pervades me, is the accomplishments of women in academic areas that were somehow introduced to me, despite the insulation of modernity in which I was born, and at a time when I was still very impressionable, as areas that women would struggle in compared to men, because of ‘our different wiring’, such as science, and mathematics. Now it is one thing to tell women that they can do it, we are told it often in the 21st century, but a completely different thing to show women that have actually done it, and I think the latter is infinitely more empowering.

Had I at an earlier point in my life, been exposed to the works of such women, I don’t think I would have held on to such a false idea for as long I did, which was long enough to alter in a way, the course of my life. So, if through my research, I can bring back to the surface the works of women that actually did it, and if this can somehow be empowering to someone, then I think I will in practice, rather than theory, begin to understand Chardin (1984) when he says, “but in the end it is by working to achieve our own inner perfection – intellectual, artistic, moral that we shall find happiness.”

So considering all the above, it is perhaps no wonder that I chose *Letters to Leontine Zanta* as one of the readings on which to focus this essay. The first French woman to receive a Doctor of Philosophy, who spent so much time empowering other women, not just by saying, but by being a living example, and I think it only appropriate to end with this quotation from Chardin in his letter to Zanta on January 25th, 1924:

I read your article on the women’s working-parties with great interest. You are quite right in seeing these as a practical triumph for feminism: it is by imposing themselves in this way, much more than by discussing the legitimacy of their rights, that women will achieve their place in society. (Chardin, 1969).

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