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► To cite this version:

L. Mcewen, C. Déchelette, S. Fauverghe. Ecobiology: More than just a word, a philosophy emerging from skincare. *Ethics, Medicine and Public Health*, 2023, 31, 10.1016/j.jemep.2023.100954 . hal-04334502

HAL Id: hal-04334502

<https://hal.science/hal-04334502>

Submitted on 21 Dec 2023

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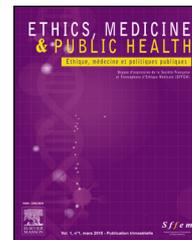


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SHORT REPORT

Ecobiology: More than just a word, a philosophy emerging from skincare

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Reçu le 25 août 2023 ; accepté le 24 octobre 2023

Disponible sur Internet le 13 November 2023

KEYWORDS

Biology ;
 Biomimetic ;
 Ecobiology ;
 Skin health ;
 Skincare

Summary

Background. – Ecobiology is an ecosystemic approach to skincare created by Jean-Noël Thorel, the founder of an international skin care company. While it was groundbreaking at the time of its creation, both the company and the society in which it operates have changed. Thus, we questioned whether the term is still comprehensible and if its meaning pertains to contemporary society.

Methodology. – Two semi-structured surveys targeting worldwide general public and the employees of an international company specialized in ecobiological skin care; a 2 two-hour advisory board with dermatologists from 11 countries; and 7 phone interviews with French dermatologists were conducted in order to determine the perception of the term “ecobiology,” its meaning, and its significance.

Results. – The results show that there is confusion over the term, which has various meanings depending on cultural context. Nevertheless, our results indicate that it is a profound concept that is felt, rather than understood as the connection between human and the natural world that surrounds us.

Conclusion. – The term remains a forward-looking concept that is more important than ever due to the current concern about the effects of nearly half a century of expanding consumerism. Our research indicates that underneath our cultural model of production based on the exploitation of nature, the human connection with the natural world remains deeply entrenched in our collective unconscious.

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Introduction

The skin is not merely a passive, protective surface, but rather a living ecosystem that evolves over time as a result of its constant interaction with other ecosystems. Following this realization, Jean-Noël Thorel developed his integrative and ecosystemic understanding of the skin, which he called “ecobiology” (Fig. 1). This systemic vision of skin health soon materialized in patents that led to the launch of ecobiologically-sound skincare products [1–8], which use the principal of biomimicry to give the skin molecules that are naturally found in its own biological composition. In so doing, it both supports and respects the skin’s natural metabolism. This “ecobiological” approach is detailed in the patent; “Cosmetic or dermo-pharmaceutical products respecting skin ecology,” which has resulted in products that give the skin what it needs without over-treating or under-treating it [9].

However, “ecobiology” is more than just an innovative way to create cosmetics; it is an integrated way of looking at the living world in which humans are seen as an intrinsic part of nature that interacts intelligently with it. This posture is linked to *ecosophy*, a concept coined by the philosopher Arne Næss at the University of Oslo in 1974 which called for a reversal of the anthropocentric perspective: Ecosophy is an environmental ethic that questions the position of man as the pinnacle of evolution who is free to draw on natural resources without limit [10]. It is this attitude towards living beings that Jean-Noël Thorel transposed to skincare.

For him, “ecobiology” is “the wisdom of taking care of the skin” using topical, dermomimetic products as part of a global ecosophical approach to the environment [11].

In 1977, Thorel used OIKOS (a Greek word meaning house) as a founding principle of his concept, because like a house, the skin covers and protects our body, delimiting its interiority from the outside world. Similarly, the plasma membrane that surrounds our cells represents the “*Oikos* of the cells”, and the ecosphere is none other than the “*Oikos* of our body” (Fig. 2). It’s easy to see why the word “ecobiology” was an obvious choice for the inventor Thorel: the root *Oikos/Eco* refers to the skin as house and an ecosystem – not to ecology. As such, coupling the prefix “eco” in reference to the skin as *Oikos*, with “biology” in reference to the skin’s biological mechanisms was the logical way to embody his approach. Today, a review of the literature indicates that while ecobiology remains largely limited to Thorel’s company, it shows potential as an approach in dermatology and biology [2].

Materials and methods

A mixed qualitative and quantitative approach was used for data collection, which involved four waves of implementation:

- first, a semi-structured online survey was conducted among the employees of an international company specialized in ecobiological skin care. In total, 2800 surveys

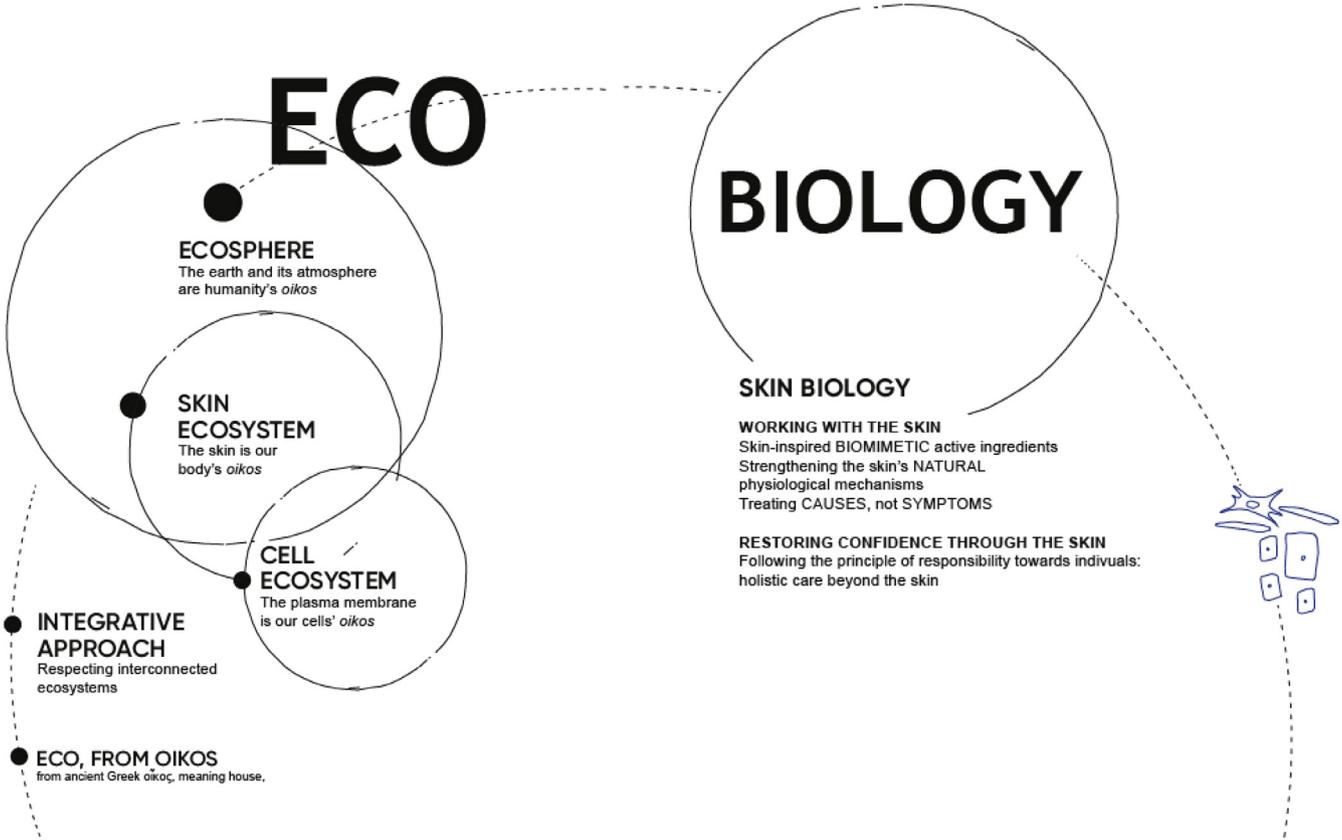


Figure 1. Map of the Thorel’s conception of ecobiology.

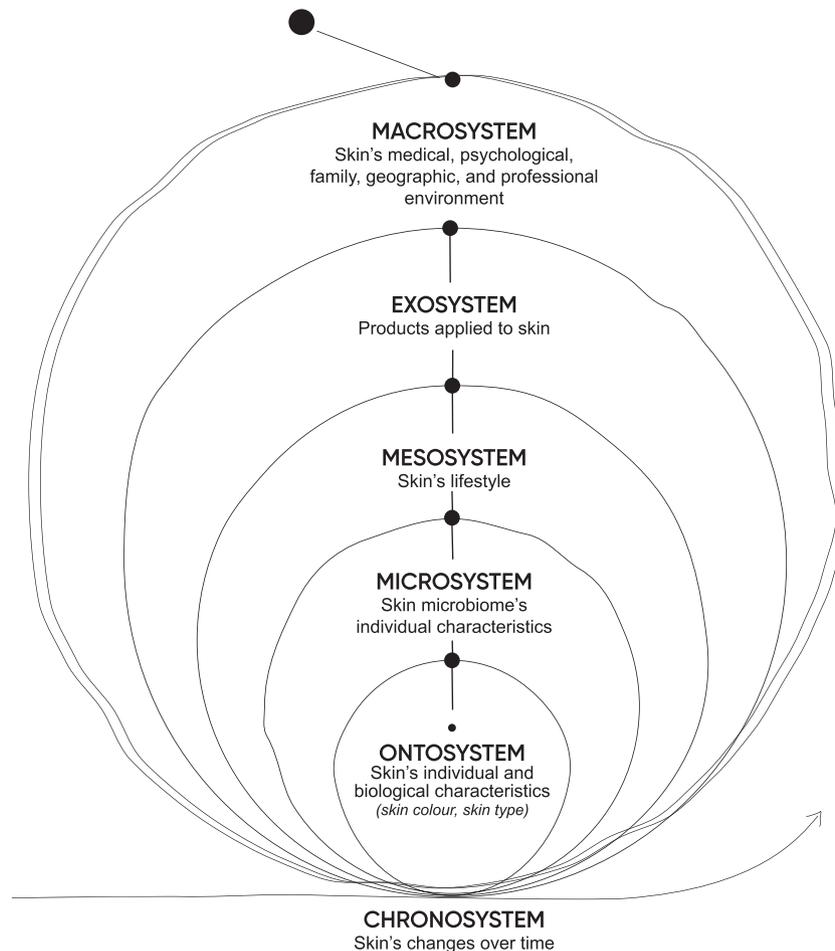


Figure 2. Ecobiology, an ecosystemic approach to skin health.

comprised of both closed and open questions were sent out in March of 2023. A total of 1614 responses from respondents representing 77 countries were collected at the end of the survey period;

- then a 2-hour advisory board was organized in Singapore on the fringes of the 2023 World Congress of Dermatology on the 6th of July, 2023. The dermatological visions of all 7 continents were represented through 11 dermatologists. Individual and group creativity techniques were used to elicit participants' perceptions of "ecobiology" both at the beginning of the meeting and at the end, following a presentation on this specialized vision of skin care. The word-maps and drawings produced during the meeting were photographed and the recordings of the meeting were qualitatively analyzed;
- semi-structured phone interviews were conducted with 7 French dermatologists in mid-July. These 45-minute interviews followed a script of both open and closed questions about the doctors' perception of the concept;
- finally, a semi-structured survey was conducted in-person in the greater Paris area in mid-July. The responses of 100 participants from 32 countries were collected.

Word grouping and discourse analysis were completed, followed by a meta-analysis of all data collected from the 1732 responses received. Throughout the data collection,

there was one question that was asked to all participants. They were prompted to state the first three words that came to mind when looking at the word, "ecobiology." The words cited were analyzed according to word groupings, both individually and collectively. Discourse analysis was conducted on all open-ended survey questions, and of the advisory board recordings and doctor interviews. Common themes in each instance were identified and compared across participant categories.

Results

A term void of sense

In response to the first question eliciting three words from the participants following their initial viewing of the term "ecobiology," a total of 4944 words were collected; corresponding to 52 word categories such as, "environment," "natural," and "science." The most commonly cited word was "biology," equating to 524/4944 instances. This was seen as banal due to the presence of the word "biology" within the concept studied. What is significant, was that the second most commonly cited word was "ecology," which accounted for 335/4944 citations. This demonstrates the almost automatic association of the prefix "eco" with

Table 1 Summary of results.

Survey Demographics	Number of surveys given	Total number of responses received	Countries represented	Age range	% Female	% Male
	2918	1732	83	17 to 80	73%	27%
	Number of words given	Most frequently cited words before explanation	Most frequently cited words after explanation	Micro level	Meso level	Macro level
Employees	4611	<p>“Ecosystem” (547/12%)</p> <p>“Biology” (483/11%)</p> <p>“Biomimetic” (360/8%)</p> <p>“Skin” (342/7%)</p> <p>“Ecology” (237/5%)</p> <p>“Environment” (153/3%)</p>	N/A	<p>Examples of remarks:</p> <p>“I use it to talk about the uniqueness of the company”</p> <p>“We are guided by ecobiology and biomimetism when we develop our products”</p> <p>“I use it to describe our products to my friends. Our products are designed to help the skin while respecting its ecosystem”</p>	<p>Examples of remarks:</p> <p>“Did you know your skin is an ecosystem that is in constant interaction with the environment?”</p> <p>“I use it when training pharmacists, doctors and colleagues about our products”</p> <p>“The way I use it depends on how I am adapting my language, it’s different for a colleague and a medical client”</p>	<p>Examples of remarks:</p> <p>“There’s evidence of the ecobiological vision at the company level, notably our protection and regeneration of the living world”</p> <p>“It’s important that we do more to reduce plastic and make more recyclable packaging”</p> <p>“We should prioritize further improving the composition of our products and their impact on the environment”</p>
Dermatologists	54	<p>“Ecology” (8/15%)</p> <p>“Ecoresponsible” (4/7%)</p> <p>“Environment” (4/7%)</p> <p>“Microbiome” (4/7%)</p> <p>“Pure” (4/7%)</p> <p>“Holistic” (3/6%)</p>	<p>“Holistic” (6/11%)</p> <p>“Microbiome” (6/11%)</p> <p>“Ecosystem” (3/6%)</p> <p>“Natural” (3/6%)</p> <p>“Nature” (3/6%)</p> <p>“Pure” (3/6%)</p>	<p>Examples of remarks:</p> <p>“Each cell is a unit in a system, just as the body as a whole is with its environment”</p> <p>“It’s a holistic concept of the science of the interaction of an individual not only with their body, but also their environment”</p> <p>“It’s a concept of cell to cell and cell to ecosystem”</p>	<p>Examples of remarks:</p> <p>“It’s based on scientific research on balancing the microbiome of the skin with the biology of the wider ecosystem”</p> <p>“It’s about a balance between our biology and the environment and maintaining this balance in a precise, nature-friendly way”</p> <p>“For me it’s the science of how the environment interacts with our body through the biology of the skin”</p>	<p>Examples of remarks:</p> <p>“It’s about preserving the biological ecosystem and using what nature gives us to do it, and in return, preserving the planet”</p> <p>“There’s a correlation between human beings and the environment”</p> <p>“We need a scientific approach for the system of natural interactions from the cell to the human to the planetary level”</p>

Table 1 (Continued)						
Survey Demographics	Number of surveys given	Total number of responses received	Countries represented	Age range	% Female	% Male
	2918	1732	83	17 to 80	73%	27%
	Number of words given	Most frequently cited words before explanation	Most frequently cited words after explanation	Micro level	Meso level	Macro level
General public	279	"Ecology" (54/19%) "Biology" (40/14%) "Environment" (15/5%) "Eco" (13/5%) "Economy" (13/5%) "Nature" (13/5%)	"Respects the skin" (27/29%) "Natural" (20/21%) "Respects nature and the environment" (18/19%) "Cares for the skin" (11/12%) "Healthy" (7/7%) "Non-aggressive" (6/6%)	Examples of remarks: "For me it means to respect the skin, nature and the environment" "It's a product that respects the skin, that's non-aggressive and made with natural ingredients" "It's good for the skin as a living organism and it respects nature"	Examples of remarks: "It's made with natural ingredients that are good for the skin" "I like products that are natural and made without chemicals; that are good for the skin" "I only use natural products"	Examples of remarks: "I do the same for my food as I do for my cosmetics, I use all that's good for the planet and avoid producing waste" "I'll use it if it's good for the environment, I always try to do what's best for the environment" "If we can save the planet by being ecobiological, sure, why not?"

“ecology,” which denotes that the term lacks a definite meaning. This is logical considering that ecology started as a naturalist concept based on the relationship between species and their environment that has taken on different points of focus, and meanings, throughout the centuries. Indeed, in the 21st century, ecology has become a rather generic term equated with the environmental conservation movement with humans as the protectors of nature; responsible for meeting the challenges our activity has provoked in the natural world. As demonstrated in [Table 1](#), this vision clearly figured in the overall word association results.

Automatically linked to “ecology”

While the notion of interconnectedness still somewhat remains within the contemporary conception of “ecology,” it really corresponds more to a sense of interdependence, in which we recognize that we are dependent upon natural resources to live, and that our activities affect those resources. Contemporary ecology has become anthropocentric and a part of the capitalist system. This was shown through the data of the general public survey in which “economy” figured among the most-cited words accounting for 4.7% of the 279 words given in responses to the first question. Furthermore, when asked whether they would prefer an ecobiological product or a classical product, 25% of the respondents evoked the importance of price in their product considerations. Various comments were also given about how the “natural” label given to products is merely a means to raise prices. For example, citations were given such as: “if it says it’s natural, it’s generally more expensive;” and “they say ‘natural’ to charge more, but usually it’s not true.”

An inherent suspicion

The study’s overall qualitative data also indicated evidence of a widespread suspicion of the phenomenon of “greenwashing;” in which companies portray themselves as environmentally-friendly, when they may be far from it. According to the general public survey data, false promises of products being made of “natural ingredients” are used in advertisements and marketing. For example, when asked whether they would prefer a classic or an ecobiological product, there were multiple citations such as: “it’s a lie;” and “it’s just the selling of lies.” The internal survey responses also included suggestions that the company go even further to prioritize their eco-responsibility efforts in order to be truly “ecobiological.”

Interpretation is directly influenced by cultural context

There were groupings in the responses that indicated the importance of shared, cultural experiences in the interpretation of the term “ecobiology”. These data clusters can be considered according to three levels.

The micro level

On the micro level, there was evidence of the influence of organizational culture among the internal survey results. For example, “biomimetic” appeared among the

internal word groupings (360/8%) whereas it was absent from the doctors’ and general publics’ responses. Other examples of this specialized vision of the concept appeared in internal survey-specific responses including: “skin” (324/7%); “natural mechanism” (76/2%); and “skin ecosystem” (59/1%). The exclusive presence of these responses among the employees corresponds to their common lived-experience with the term “ecobiology,” which they identified as coming through company meetings and training sessions. Not only did this directly shape their associations with the word, it also influenced the way in which the employees used the term. For example, many of them viewed it as a part of their daily activities and as the heart of what they identified as their “company culture.”

The meso level

On the meso level, the terms “microbiome” (13/0.2%), “exosome” (1/2%), and “lipids” (1/2%) were only present in the internal and doctor survey replies. This is logical considering their specialized education on the skin that the general public lacks. Likewise, the terms “health,” “healthy,” and “care” were largely absent from the general public’s initial word associations while they accounted for (190/4%) responses in the doctor and employee surveys. Considering that 77% of the employees have advanced degrees and that both they and dermatologists have highly-specialized educations, their automatic association of “ecobiology” with the skin’s mechanisms, components and care is logical. It again demonstrates the profound influence that a shared lived-experience with a particular cultural vision has on our understanding of a concept.

The macro level

On the macro level, there were expressions concerning various aspects of our collective responsibility to care for the environment among all three survey responses. For example, “environment” was a commonly cited term in all surveys (172/4%); as were “nature,” “planet,” “ecoresponsible,” and “sustainability” (264/5%). Falling in line with the 21st century vision of “ecology,” this is evidence of the current ethos in which humans are seen as responsible for the environment and the general consumer is increasingly turning towards more “ecological” consumption patterns. In the survey responses, this was demonstrated through comments such as: “I like products that respect the environment;” and “I would buy ecobiological products to protect nature.” It is important to keep in mind that according to its founder, “ecobiological” means respecting the skin by mimicking its components and mechanisms. Meanwhile here, we see that there is a widespread association of “ecobiological” with “protecting nature.” Even among the employee responses, there were comments that the company should be more environmentally-friendly by using, “recycled packaging materials,” and “more environmentally-friendly ingredients.” Taken together, this implies that there are multiple levels and layers of meaning that are given to words or concepts such as “ecobiology” that depend on both our individual and our common lived cultural experiences.

Discussion

At the time of its conception, this term was a truly innovative concept in skincare, and it was designed with a philosophical vision of the inherent connection between man and nature. The word “ecology” was coined in 1866, from the combination of the Greek words *Oikos* (house, living place) and *Logos* (science, study) to arrive at the term *Ökologie*, which literally means “the study of the environment”. Since then, the science of ecology has become a vast field of research in the biological sciences. Throughout the survey, “ecology” was always among the answers. “Ecobiology”, “ecology”, it’s true that the words and the phonemes do sound alike. The combination of the over-lasted meaning of “ecology” and its linguistic proximity to “ecobiology” leads to a systematic confusion over this forward-looking skin care concept and its original meaning.

However, we believe that this systematic confusion does not give rise to any serious misunderstanding, since both terms evoke the same archetype of the interconnectedness of man and nature. Our data clearly demonstrates that for many people today, ecology in cosmetics boils down to environmentally-friendly products with a focus on packaging, marketing and their effects on nature. As a result, the holistic conception of ecobiology as caring for body and environment as a single entity is overlooked. To understand its true value, we need to recall the genesis of the ecobiological approach and its prefix, which refers to *Oikos* as interconnected ecosystems. In other words, we have to go back to etymology to fully grasp the essence of this unique approach.

Our study indicates that *Oikos* is part of the collective unconscious that is understood through our experiences of connection with nature. This came out in our data in various ways, such as in the reoccurring associations of “ecobiology” with the “Earth;” “planet;” “ocean;” “plants;” “life;” “living;” and “nature.” As we continue to expand our consumption-based model, there is a general worry about the state of the natural world around us. There is also suspicion of the appropriation of all that is “natural” and “organic” for sales and marketing. As such, this concept is more important than ever as the *Oikos* archetype it evokes is actively present in the minds of the public, who seek to strengthen their connection with nature. Their comments show the belief that using genuinely “natural products” is a means of both preserving their organism and the environment in which it is found.

Falling in line with the metaphysics of nature and phenomenology, this is evidence of how intrinsic our connection with nature is and the contemporary desire to reinforce it. Thus, this study indicates that the feeling and experience of a concept can indeed be more important than the words that are attributed to it.

Conclusion

Considering the overwhelmingly positive association of the word in the minds of nearly 2000 participants from more than 80 countries and across all age groups; along with the apparent confusion over the definition and exact meaning of the word, it is worth developing and refining the definition

of “ecobiology” so that it can be better shared with the public. Not only with this shed more light on this innovative term and the potential it brings to the design of skincare products, it will respond to the public’s demand for products that are genuinely good for them and which help them to feel their connection with nature in a more concrete way. Perhaps by restoring our vision of our interconnectedness with the world around us, we will be better able to see our skin as a microcosm that operates with the same materials and mechanisms as the macrocosm in which we live. In this sense, “ecobiology” represents a philosophy that emerges from skincare.

Human and animal rights

The authors declare that the work described has not involved experimentation on humans or animals.

Informed consent and patient details

The authors declare that this report does not contain any personal information that could lead to the identification of the patient(s) and/or volunteers.

Funding

This work has been supported by NAOS Lighthouse.

Author contributions

All authors attest that they meet the current International Committee of Medical Journal Editors (ICMJE) criteria for Authorship.

Disclosure of interest

The funding for this study and approval of its methodology for internal data collection was given by NAOS. Author Stéphane Fauvergne is directly affiliated with the company. Authors Laurel McEwen and Corinne Déchelette are not directly affiliated with the company.

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