

Editorial

Tribute to Stephen Hawking: six life lessons that scientists should remember

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“We are just an advanced breed of monkeys on a minor planet of a very average star. But we can understand the Universe. That makes us something very special.”

On March 14, 2018, after 76 years of living a purpose driven life, Stephen Hawking left Earth. He wanted to gain a total comprehension of the Universe by questioning his own existence and special characteristics. One of his recommendations was that one should always look up at the stars, not down at his own feet. *“Try to make sense of what you see and wonder about what makes the universe exist”*, he said. *“Be curious.”*

Along with his giant contributions to the field of theoretical physics, he instilled in us curiosity for developing some characteristics that no scientist interested in sustainability should forget:

1. **Be positive.** *“One has to have a positive attitude and must make the best of the situation that one finds oneself in”*, he said.

The cosmologist was diagnosed with amyotrophic lateral sclerosis when he was 21. At the time, doctors said that Hawking would not live for more than three years. He handled the illness by concentrating on activities related to theoretical physics, that would not require physical effort. The body was limited by this degenerative condition, but the genius' mind continued active and shining until the end.

“My expectations were reduced to zero when I was 21. Everything since then has been a bonus”, mentioned the scientist in an interview for *The New York Times*, in December 2004. Besides, he was valuing his own problems: *“Without imperfection, neither you nor I would exist”*, he explained in the documentary *Into the Universe with Stephen Hawking*, released by The Discovery Channel in 2010.

2. **Keep fighting for saving the Planet.** Although he did not have many expectations from humanity future on Earth, the British never denied the importance of continuing to protect the Planet. *“I am not denying the importance of fighting climate change and global warming, unlike Donald Trump, who may just have taken the most serious, and wrong, decision on climate change this world has seen,”* Hawking said about US withdrawal from the Paris Agreement (see SeD Editorial vol2, n, 2, 2017).

3. **Nevertheless, get your luggage ready.** *“We are running out of space and the only places to go to are other worlds. It is time to explore other solar systems. Spreading out may be the only thing that saves us from ourselves.”* Indeed, his final theory offers a tragic vision of our future. It preconizes that our Universe destiny is to disappear, just as stars quench with no energy.

4. **And above all, don't be afraid.** Hawking was caught in a paralyzed body, but it didn't stop him

from helping us to understand the vastness of the universe we inhabit. “*This was Stephen: to boldly go where Star Trek fears to tread*”, said his colleague Thomas Hertog, from Leuven University, to *The Sunday Times*. He co-authored and revised Hawking’s last mathematical paper that shows proof of the “multiverse” theory, 15 days before his death.

With this article, named *A Smooth Exit from Eternal Inflation*, the involved scientists wanted to transform the idea of the multiverse into a testable scientific framework. A famous scientific journal is now assessing the paper. For Hertog, if such evidence would have been discovered during Stephen Hawking’s lifetime, he would have certainly run for the Nobel Prize, for which he has been nominated several times and never won. Which brings us to the next point:

5. Do your best and don’t give up it when there is no formal recognition. One of Hawking’s most famous theories was the *Hawking radiation*. It pretends to explain black holes. This brilliant concept has not been proved yet and it might be for this reason that no Nobel Prize has been awarded to Hawking. And still, he never gave up.

6. Keep your sense of humor alive. “*The downside of my celebrity is that I cannot go anywhere in the world without being recognized. It is not enough for me to wear dark sunglasses and a wig. The wheelchair gives me away*”, he told, humorously, an Israeli journalist in December 2006.

One last life lesson the great British scientist left us with is that: **scientists can, indeed, try to make science matters easy to understand by everyone, even those that are more abstract.** Stuck to his wheelchair and unable to speak, he kept trying and always transmitted big part of his ideas through a computer system with eye-tracking technology. “*I want my books sold on airport bookstalls*”, he said to *The New York Times*, in December 2004.

His book *A Brief History of Time* went beyond all expectations. It sold more than 10 million copies and was translated into dozens of languages. Hawking used to joke about the fact that people would purchase his book for making them look smart, but they would not take the time to read it. The British was characterised by his sense of humour and humility.

His courage, persistence and dedication to science in the service of mankind are an important legacy he left us with. The Journal Sustainability in Debate shares those values and that is why the editorial pays homage to this scientist. It is important that readers and collaborators continue to dedicate themselves to humanity and planet just as Stephen Hawking did. *Sustainability* can be seen as the concept that includes all those values.

SeD’s first issue of 2018 releases the *Dossier Ecosystemic Approaches in health, environment and sustainability: progress and perspectives*, by editors Lia Giraldo da Silva Augusto and Frédéric Mertens. The Dossier is a collection of six articles and four reviews that illustrate research diversity and practices on Ecosystem approaches to human health.

The article *Where ecosystems, persons and health meet: academic traditions and emerging fields of research and practices* by Jordan Oestreicher et al., analyses eighteen existing fields from this area of knowledge, highlighting common and divergent elements. It considers several schools of thought and application fields working with health and associated social and ecological phenomena.

Lia Giraldo da Silva Augusto et al. present the article *Analysis of the constitutive order on social and environmental determination of occupational benzene poisoning: revisiting the case of Cubatão-SP, Brazil*, based on an on-site study examining benzene effects on workers from the steel industry. It considers workers’ clinical complaints and makes a histological analysis of the bone marrow and performs a clinical evolution of intoxicated workers.

Another article on exposure to chemical agents and effects on human health is the one written by Renata Spolti Leão et al. Entitled *Public health assessment of agrochemicals exposure: an experience with family farming in the northwest of Rio de Janeiro* this research was realized among family farmers from São José de Ubá, State of Rio de Janeiro and was based on the conceptual perspective of Ecohealth.

In their paper *Participatory mapping and approaches in health and environment*, Heloíse Canal and Marla Kuhn introduce the process of map elaboration on the relationship between environment and health. To do so, the authors studied experiences and interrelations of health service workers in the city of Porto Alegre, state of Rio Grande do Sul.

Territorialities, health and environment: connections, knowledge and quilombolas practices in Sergipe, Brazil, article written by Roberto Lacerda and Gicélia Mendes, is an analysis of how knowledge and traditional practices of health care can build territorialities that contribute to environmental conservation in communities of quilombolas.

Under an ecosystem health approach and from a civilizational perspective, Paula Freire Vieira and Marina Gasparini present their article *Ecosystem health: from ecological unconsciousness to a new civilizatory project*. Uncertainties brought up during the Anthropocene Era are here a fundament for images created around human beings and life evolution on Planet Earth. This last paper from the Dossier analyses recent researches on mind and consciousness functioning.

The four reviews, part of our Dossier, are as follows: *Ecohealth: research experience and innovative practices to understand linkages between health, ecosystems and society* by Renata Távora; *Perspectives for projects using an ecosystem approach to human health: action research for health and environment protection*, by Mariana Olívia Santana dos Santos; *Ecosystem approach to dengue control: a complex solution*, by Solange Laurentino Santos; and *Spanish version of the Dossier Abrasco on the impacts of pesticides on health: much more than a simple translation*, by Elis Borde.

Section Varia presents multiple topics on sustainability and includes one essay and eight articles. The essay *Slow seeing and the environment: connections and meanings in beyond Fordlândia (Olhar lento e meio ambiente: conexões e significados muito além de Fordlândia)*, by author Marcos Colón, is an account of his documentary *Beyond Fordlândia*, released in 2017. Colón used the concept of “Slow Violence”, a key concept in the ecocritical thought of Rob Nixon, to document through striking images the dramatic socio-environmental impacts of the territorial transformations suffered by the Brazilian Amazon region.

The article *Actors and Institutions in the Brazilian Climate Change Policy* written by Diego Rodrigues and Vivianny Galvão, focusses on climate change. It is an analysis of the composition and characteristic of the Inter-Ministerial Commission on Global Climate Change (Comissão Interministerial de Mudança Global do Clima, in Portuguese).

Authors Marta Luciane Fisher *et al.* analyse online information on the water crisis in their article *Communications on the water crisis: the Internet as an ethical awareness tool*. They examine how those information pass between Brazilian Internet users and their reaction to the topic.

In the article *Facades thermal insulation: decrease of energetic consumption of buildings from Bioclimatic Zone 2*, authors Rodrigo Spinelli *et al.* present an analysis around thermal insulation of buildings. They realized a study in the city of Lajeado, RS using normative calculations and temperature measurements in prototypes executed in masonry there located. The project considers the hot climate of the region and the global scenario of increasing energy demand knowing that its generation still depends on exhaustible and polluting natural resources.

Through a literature review on the state of the art of waste pickers’ life conditions, the article *Living conditions among recyclable waste pickers: integrative literature review*, written by Joaquim Vasconcelos, Silvia Maria Guimaraes and Izabel Zaneti, gathers information from secondary scientific sources on life, health and work situations of this target group.

Authors Juliane Chicatto *et al.*, through their article *Treatment of the textile wastewater through fungi: a sustainable alternative*, propose an analysis on the decolorization of textile effluents. They announce that textile wastewater treatment with fungi is more adequate and effective in removing dyes compounds.

The article *Comparative analysis of sustainability indicators among the states of the Brazilian Amazon* by Francinelli do Vale, Peter Mann de Toledo and Ima Célia Vieira, focusses on the sustainability of this region. It presents an overview of the nine states from the Amazon region. They use 54 indicators of sustainability and other tools to highlight specific characteristics and vulnerabilities of each one of those states. The authors assume that these particularities are directly connected to historical constraints, geographical characteristics and development models adopted so far.

Another article on this region is the one written by Damaris Teixeira Paz and Maria Inês Gaspareto Higuchi, *Origin of the interest, motivation and environmental concern in socio-environmentally engaged young in the Manaus, AM*, metropolitan region. It is a research with young people engaged in social and environmental collectives from three cities from the metropolitan region of Manaus.

Finally, the article *A synthesis of the main conditions for effectiveness of small-scale fisheries co-management*, written by author Thiago Zagonel Serafini, makes a literature review on this topic. It lists the main conditions for co-management effectiveness.

We hope you enjoy reading this issue!

The Editors