

A Simple Tool to Account for the Spatial Specificities of Stakeholders in Ecological Rehabilitation Projects: A Flash Test

Fenianos J¹, Khater C^{2*}, Fahed M³ and Brouillet D¹

¹University Paul Valéry, Laboratoire Epsilon, Montpellier, France

²Center for Remote Sensing-National Council for Scientific Research Lebanon, Lebanon

³Department of Landscape and Territory Planning, Lebanese University, Lebanon

ISSN: 2770-6745



***Corresponding author:** Khater Carla, Center for Remote Sensing- National Council for Scientific Research Lebanon, Bir Hassan- BP 11-8281 Riad El Solh, Beirut-Lebanon

Submission:  June 15, 2022

Published:  June 22, 2022

Volume 2 - Issue 5

How to cite this article: Fenianos J, Khater C, Fahed M, Brouillet D. A Simple Tool to Account for the Spatial Specificities of Stakeholders in Ecological Rehabilitation Projects: A Flash Test. *Biodiversity Online J.* 2(5). BOJ. 000546. 2022. DOI: [10.31031/BOJ.2022.02.000546](https://doi.org/10.31031/BOJ.2022.02.000546)

Copyright@ Khater C. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use and redistribution provided that the original author and source are credited.

Opinion

Ecological science, restoration ecology and ecological restoration have developed techniques, methods and approaches to better apprehend the diversity and dynamic of natural processes and account for biodiversity needs for connectivity, especially when planning the rehabilitation of ecosystems [1-3]. Still, even if solutions are being developed, the major constraint to proper implementation often remains in the transfer of this knowledge to concerned stakeholders in order to get their approval. Ecological rehabilitation projects involve a profound modification of the current landscape and therefore require the adoption, by the neighboring communities and decision-makers, of the landscape modification resulting from the project. Presenting the elements of the rehabilitation project plays a crucial role in its acceptability. To understand their environment, humans use abstract metaphorical concepts that reflect their mental states. Among such abstract concepts are those that refer to emotion, i.e., “bad”, “good”. So, if ecological rehabilitation projects offer solutions that reflect concepts that are negative in people’s mind, they will not be accepted even if they reflect confirmed ecological knowledge [4,5] elaborate the “conceptual metaphor theory” to account for the role of abstract concepts in our everyday life. For example, we say : “my right arm” to talk about a person we trust, “I stood up on my left foot” to say that I am in a bad mood. Conceptual metaphors are generally shared by members of a culture and are largely unconscious and automatic. These metaphorical concepts impact our thoughts and actions. “Conceptual metaphors” are a cognitive phenomenon, grounded in the body and in everyday experience [4]. Several works in the field of embodied and situated cognition have produced considerable evidence that individual sensory-motor experiences can affect perception and judgments. The particular interest of our research is the concept of orientation metaphors, which related to spatial orientation, such as up-down [6-10] and right-left [3,11,12]. For example, “up” as “right” is associated to “good” and “down” as “left” is associated to “bad”, in occidental culture. Recent work of Fenianos [13] has confirmed the need to adapt presentation modes to target audience, either in terms of inverting the evaluation scale bar or positioning objects and images with respect to cultural backgrounds. However, when faced with new audience or human communities, it is important to understand their mental schema beforehand, in order to adapt the communication tools to their local specificities. The challenge of how to transfer and exchange information with stakeholders, community and decision-makers involved in the implementation as well as their perception occurs in all projects, especially the environmental ones. This aspect of communicating knowledge and information, and to share conclusions, is particularly compelling in environmental projects, as the people involved and their spatial perception play a major role in the obstruction or acceptance of elements that are essential to proper project development. The methods and tools employed in rehabilitation ecology and spatial conception are complicated, time consuming, and need a large investment. These

methods and tools are promising but sometimes challenged by the preconceived ideas and expectations of stakeholders and their adoption and implementation are regularly opposed to reluctance [13]. Therefore, a simple tool to account for the spatial specificities of stakeholders in ecological rehabilitation projects : A Flash test, is suggested, reducing thus time, cost and complications and allowing a quick understanding of the lateral perception of a target audience. This method is tested in Lebanon, a mutli-cultural Mediterranean country. Lebanon can be considered a good prototype of complex social, ecological and political countries [14]. This paper's main contribution is to emphasize the need of using this basic technique to account for spatial specificities of stakeholders in ecological rehabilitation initiatives. However, in order to establish their broader relevance, this finding should be investigated on bigger groups of individuals and in diverse semitic speaking situations. In this paper we suggest a "flash test" as a simple method allowing a quick understanding of the lateral perception of a target audience.

Seven stimuli images of common and well known species of flora and fauna in Lebanon are used for this experiment (Figure 1 Turtle, Eagle, Anemone, Viper, Forest, Scorpion, Herb). Participants are handed the seven images printed and cut on small squares (8x8cm), with an evaluation sheet showing an appreciation Likert

scale bar of 5cm ranging from "dislike" to "like" (Figure 1) for each image, in order to link negative and positive reactions, respectively. They are invited to give an appreciation score for each image (Figure 2) then to position each image on a sheet showing seven empty squares (Figure 3). Filled sheets are collected and appreciation scores measured in cm the mean average (min 0, max 5) and standard deviation for each image. Average appreciation scores are analyzed by Paired Student T test using the Jasp platform (<https://jasp-stats.org/>) and confronted with an acceptance threshold of 5%. A Chi square test is used to compare significance of occurrence of each image at left vs. Right vs. Center. If as confirmed in Roberts et al. (2009) the future of our planet depends on the mastering of the "young discipline" that is ecological restauration, it is our duty to invest in the preservation and improvement of ecosystem services, ecological connectivity and biological cycles that rely on the functioning of corrupted ecosystems. Mediterranean ecosystems knowledge and the mastering of ecological engineering techniques have made substantial progress during the last decades. Unfortunately, the transfer of these techniques on the field and their implementation are still sparse, and notably in environments where consistent interactions with human communities require the appropriation and adoption of intervention methods.



Figure 1: Stimuli images of common flora and fauna in Lebanon used for this experiment.

Rate on the scale to what extend do you like
or dislike the subject shown on the picture

| | |
|---|--------------------|
|  | Dislike _____ Like |
|  | Dislike _____ Like |
|  | Dislike _____ Like |
|  | Dislike _____ Like |
|  | Dislike _____ Like |
|  | Dislike _____ Like |
|  | Dislike _____ Like |

Figure 2: Appreciation sheet for the 7 stimuli images to be filled by participants.

Place the pictures in the white squares
according to your preference.
Only one picture per square
is allowed.

| | | |
|--|--|--|
| | | |
| | | |
| | | |

Name: _____

Figure 3: “Position” sheet showing 7 empty cases to be filled by the participants with the images.

The Mediterranean basin, which is considered a hotspot for diversity, evolves in tense and often unstable sociopolitical conditions, along with huge demographic increase, poorly-planned urbanization and a long history of coevolution of men and landscapes dating back to the Neolithic period. This makes this transfer of techniques yet more complex. In this context,

- a) How can we overcome the resistance shown by decision-makers and stakeholders and win acceptance on the proposed technical solutions ?
- b) How can we bring people to better accept modifications relating to their life environments ?
- c) Is it possible to initiate an attitude and behavioral change towards the proposed solutions ?
- d) In other words, can we induce acceptance for the intervention techniques and methods on an environment/ecosystem when these are met with the stereotypes disseminated by the concerned human communities ?
- e) How can we change the behaviors of individuals towards the modifications of their close environment ?

Deriving from the need to have access to a technique that allows a quick and effective understanding of the mental schema of a target community, in order to be able to accordingly adapt the presentation modes during a public presentation of a rehabilitation project, this paper has tested a “flash” methodological approach. The simple tool- flash test in line with previous findings [13] where, in Arabic speaking communities, negatively perceived items are

preferred positioned at the right side of the screen while positively viewed items are best perceived at the left side of the screen. The test is consistent with the conceptual metaphor theory, but did not support the findings of De La Fuente [15], who found that cultural traditions have no effect on the body-specific link between valence and left-right space. The observation that the left side is viewed positively by Arabic-speaking communities could be related to their writing/reading habits, according to which the sentence ending direction is in relation with the complete meaning of the sentence itself, and therefore is viewed as a directional orientation for the author. Therefore, accounting for the mental lateral perceptions of stakeholders and adapting presentation modes accordingly could considerably increase the chances of reducing resistance and increasing acceptability of an environmental project’s components. Ongoing experiments are being tested to confirm this configuration on up and down directions [16,17]. It would also be interesting to test this flash test method on other sinistro-dextrally communities.

References

1. Jordan WR (1987) Restoration ecology: Ecological restoration as a technique for basic research. *Restoration ecology: A synthetic approach to ecological research*.
2. Le Floch E, Aronson J (1995) Ecologie de la restauration, définition de quelques concepts de base. *Natures Sciences Societes Hors série* pp. 29-35.
3. Milhau A, Brouillet T, Brouillet D (2013) Biases in evaluation of neutral words due to motor compatibility effect. *Acta psychologica* 144(2): 243-249.
4. Lakoff G, Johnson M (1999) *Philosophy in the Flesh*. New York, USA.

5. Lakoff G, Johnson M (2003) *Metaphors we live by*. (2nd edn), University of Chicago, Chicago, USA.
6. Meier BP, Robinson MD, Clore GL (2004) Why good guys wear white: Automatic inferences about stimulus valence based on brightness. *Psychological Science* 15(2): 82-87.
7. Meier BP, Robinson MD (2006) Does “feeling down” mean seeing down? Depressive symptoms and vertical selective attention. *Journal of Research in Personality* 40(4): 451- 461.
8. Meier BP, Hauser DJ, Robinson MD, Friesen CK, Schjeldahl K (2007a) What’s “up” with god? vertical space as a representation of the divine. *J Pers Soc Psychol* 93(5): 699-710.
9. Meier BP, Robinson MD, Crawford LE, Ahlvers WJ (2007b) When ‘light’ and ‘dark’ thoughts become light and dark responses: Affect biases brightness judgments. *Emotion* 7: 366-376.
10. Richardson DC, Spivey MJ, Barsalou LW, Mc Rae K (2003) Spatial representations activated during real-time comprehension of verbs. *Cognitive Science* 27(5): 767-780.
11. Brouillet D, Vagnot C, Milhau A, Brunel L, Briglia J, et al. (2015) Sensory-motor properties of past actions bias memory in a recognition task. *Psychol Res* 79(4): 678-686.
12. Casasanto D (2009) Embodiment of abstract concepts: good and bad in right-and left-handers. *J Exp Psychol Gen* 138(3): 351-637.
13. Fenianos J, Khater C, Brouillet D (2018) When psychology meets ecology: Cognitive flexibility for quarry rehabilitation. *International Journal of Psychological and Behavioral Sciences* 12(5): 217-223.
14. Khater C (2015) *L'écologie appliquée: une responsabilité scientifique au carrefour de l'interdisciplinarité*. Université Aix-Marseille, France.
15. De La Fuente J, Santiago J, Román A, Dumitrache C, Casasanto D (2014) When you think about it, your past is in front of you: How culture shapes spatial conceptions of time. *Psychol Sci* 25(9): 1682-1690.
16. Fenianos J, Khater C, Brouillet D (2018) Adapting presentation mode to cultural background in environmental projects-effect of reading/writing habits. *CPQ Neurology and Psychology* 1(1): 1-13.
17. Thompson J D (2005) *Plant evolution in the Mediterranean*. Oxford University Press, Oxford, UK.