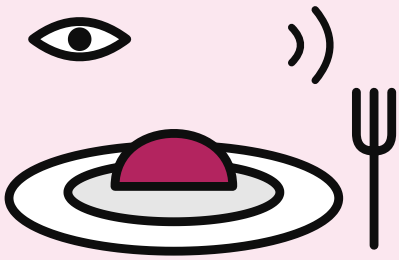
Concept

Gastrophysics

A field that combines gastronomy and psychophysics to measure how what surrounds food, from the plate to sound or place, changes the experience of eating.



In Spanish

Gastrofísica

Origin

The term was first used in physics (Parker, 2004); Spence (2017) popularized it as gastronomy plus psychophysics

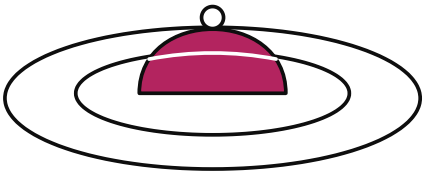
What problem it addresses

It explains why the same food tastes different depending on how and where it is served. Food design takes data from it to choose plates, cutlery, presentations and spaces, instead of relying on intuition alone.

An example

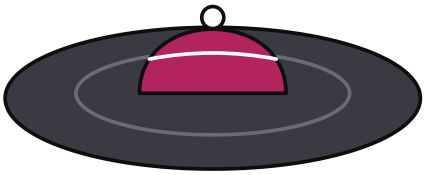
An example based on a study: the same strawberry dessert, served on a white plate and on a black one.

White plate



You taste the dessert on a light background. **It seems sweeter and you like it more.**

Black plate



You taste the same dessert on a dark background. **It seems less sweet.**

The dessert doesn't change: the plate does. Gastrophysics measures those differences so they can be designed.

Why it happens

1 

Eating involves all the senses. We see, smell and hear before we taste.

2 

The brain blends those signals. The plate, the sound or the cutlery all count.

3 

That is why the setting changes the taste, and that change can be measured with experiments.

Applications in design

✓ Use it like this

Test the food with the plate and cutlery, and in the place where it will be served, not in isolation.

✗ Avoid

Assuming that an effect measured in a study will repeat the same way with any plate or in any restaurant.

Don't fall for it

If something tastes different somewhere else, think about what changed around it before blaming the food.

7.7 vs. 5.0

White plate

Black plate

What the research says

How appetizing the same dessert looked, from 1 to 9, on a white plate and on a black plate, according to 253 diners in a restaurant (Piqueras-Fiszman, Giboreau and Spence, 2013).

●●○ **Debated evidence.** The effect depended on the dessert: another one was liked more on the black plate. In the lab, a strawberry mousse tasted sweeter on the white one (Piqueras-Fiszman, Alcaide, Roura and Spence, 2012).

Connections

Used in

- Experience design
- Multisensory design
- Eating design

Related to

- Sensation transference

Authors and works

2017	**Charles Spence**	Popularized gastrophysics in a book that gathers experiments on how sight, hearing and the setting change what we eat and how we experience it.
2012	**Piqueras-Fiszman, Alcaide, Roura and Spence**	In the lab, the same strawberry mousse tasted sweeter and more intense, and was liked more, on a white plate than on a black one; the plate's shape made no difference.
2021	**Carlos Velasco, Charles Michel and Charles Spence**	Reviewed the origin of the term and its two meanings: the physics of cooking and the study of how the eater perceives.

Sources

Original sources

- Spence, C. (2017). Gastrophysics: The new science of eating. Viking.
- Piqueras-Fiszman, B., Alcaide, J., Roura, E., & Spence, C. (2012). Is it the plate or is it the food? Assessing the influence of the color (black or white) and shape of the plate on the perception of the food placed on it. Food Quality and Preference, 24(1), 205–208. View source (https://doi.org/10.1016/j.foodqual.2011.08.011)
- Piqueras-Fiszman, B., Giboreau, A., & Spence, C. (2013). Assessing the influence of the color of the plate on the perception of a complex food in a restaurant setting. Flavour, 2, 24. View source (https://doi.org/10.1186/2044-7248-2-24)

Academic reviews

- Velasco, C., Michel, C., & Spence, C. (2021). Gastrophysics: Current approaches and future directions. International Journal of Food Design, 6(2), 137–152. View source (https://doi.org/10.1386/ijfd_00028_2)

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