

Entrainment

Entrainment is a principle of physics which was discovered in 1665 by a Dutch Physicist Christian Huygens. Entrainment can be defined as the synchronisation of organisms to an external rhythm i.e. the tendency for two oscillating bodies to lock into phase so that they vibrate in harmony.

It was during his research with pendulum clocks that Huygens found that when he placed two clocks on a wall near each other and swung the pendulums at different rates, they would end up swinging at the exact same rate; they fell into rhythm with one another. He realised that this concept applied not just to pendulum clocks, but appeared to be a basic law of physics.

The principle is universal and appears not just in nature or mechanical pendulum clocks, but also in principles of chemistry, pharmacology, biology, medicine, psychology, sociology and more.

Entrainment can also be described as a state where whenever two or more oscillators in the same field are pulsing at nearly the same rate, they tend to "lock in" and begin pulsing at exactly the same rate. The rhythmic vibrations from one source will cause less powerful vibrations of another source to lock into the vibration of the first source.

An even simpler definition is that it is a synchronisation of two or more rhythmic cycles. The theory behind entrainment is that the less diversity there is in a system the more energy it will conduct. In plain English, it is easier and takes less energy for systems to work in cooperation than in opposition.

In practice, we entrain to the rhythms around us all the time, although we are not generally aware of it. It is scientifically proven that every cell in our body, every atom in the universe is in a state of vibration to which the 'lock in' rule applies.

Our internal rhythms will speed up or slow down to match a stronger external rhythm. For example, try counting your heart beat or breathing rate when you are stuck in traffic, around noisy machinery, or listening to loud rock music. Then count your heart rate or breathing rate when sitting quietly on a beach or listening to peaceful music in a quiet surrounding.

Other examples of entrainment include:

- When a musician has the audience spellbound, he or she has entrained them into the rhythm.
- A charismatic preacher can do the same with his congregation.
- When you meditate in a group, you feel the increased 'strength' of the experience.
- Participating in an exercise class doing aerobics to up-tempo music.
- When young women work or live together, their menstrual cycles often fall into line with each other.