

of scenarios involving both visual and aural perception. The mechanics by which the mind exercises the consciousness function will be addressed in more detail later in this paper.

7. Frequency Following Response. To achieve synchronization of brain hemispheres, the Hemi-Sync technique takes advantage of a phenomenon known as the Frequency Following Response (FFR) which means that if a subject hears a sound produced at a frequency which emulates one of those associated with the operation of the human brain, the brain will try to mimick the same frequency pattern by adjusting its brainwave output. Therefore, if the subject is in a fully awake state but hears sound frequencies which approximates brainwave output at the Theta level, the subject's brain will endeavor to alter its brainwave pattern from the normal Beta to the Theta level. Since the Theta level is associated with sleep, the subject concerned may progress from a fully awake to a sleep state (provided that he does not consciously resist) as the brain strives to entrain its wave frequency output with the one which the person hears. Since these brainwave frequencies are outside the spectrum of sounds which can be heard in pure form by the human ear, Hemi-Sync must produce them based on another phenomenon known as the brain's capacity for deducing "beat" frequencies. If the human brain is exposed to one frequency in the left ear which is 10 Hertz below another audible frequency played in the right ear, rather than hearing either of the two audible frequencies, the brain chooses to "hear" the difference between them, the "beat" frequency. Thus, availing itself of the FFR phenomenon, and using the technique of "beat" frequencies, the Gateway system uses Hemi-Sync and other audio techniques employing the FFR phenomenon to introduce a variety of frequencies which are played at a virtually subliminal, marginally audible level. The objective is to relax the left hemisphere of the brain, place the physical body in a virtual sleep state, and bring the left and right hemispheres into coherence under conditions designed to promote the production of ever higher amplitude and frequency of brainwave output. Audible and perhaps subliminal suggestions by Bob Monroe accompany the various brainwave frequencies, which are sometimes rolled in together with other sounds such as sea surf to mask the sound frequencies where desirable. In this way, Gateway endeavors to provide the subject with the tools by which he may alter his consciousness based on his own volition over time through the repetitive use of the tapes so as to access, via intuitive means, new categories of information not available to ordinary consciousness.

8. Role of Resonance. However, brain coherence through entrainment to "beat" frequencies introduced via stereo headphones is only part of the reason why the Gateway system works. It is also designed to achieve the physical quietude characteristic of deep transcendental meditative states which brings about a complete alteration of the fundamental resonance pattern associated with the sound frequencies produced by the human body. Yoga, zen or transcendental meditation, if practiced long enough, will produce a change in the sound frequency with which the human heart resonates throughout the entire body. According to Bentov, this change in resonance results from elimination of what the medical profession calls "the bifurcation echo" so that the sound of the heartbeat can move synchronously up and down the circulatory system in harmonious resonance approximately seven times a second. Bentov describes the roll played by the bifurcation echo as follows: "When the left ventricle of the heart ejects blood, the aorta, being elastic, balloons out just beyond the valve and causes a pressure pulse to travel down along the aorta. When the pressure pulse reaches the bifurcation in the lower abdomen (which is where the aorta forks in two to go into the legs), part of the pressure pulse rebounds and starts traveling up the aorta. If in the meantime the heart ejects more blood, and a new pressure pulse is traveling down, these two pressure