

DOMINANT FREQUENCIES IN SPERM WHALE CLICKS

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regular clicks from single diving male sperm whales off Kaikoura, New Zealand were currently investigated on the presence of dominant frequencies in the Fourier spectrum. Notwithstanding the results of Goold and Jones (Goold 1995) for the clicks in our dataset the higher dominant frequency did not clearly show up in a plot of the Fourier spectrum. Therefore a parametric estimation of the two dominant peaks is proposed based on a Gabor model. Although this method seems to yield a good modelling of the dominant frequency, the variability in a click train does not make it a reliable parameter for individual identification of a subject.

FROM A COMPOSER'S PERSPECTIVE

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Our attempts to understand the acoustic realm of cetaceans have traditionally adhered to the research tools of science. As a Humpback Whale field researcher and a classical musician by training, I propose a more interdisciplinary approach whereby the investigation of acoustic behavior is conducted through the creative process of composition. Composer Edgar Varese, who once gave a definition of music as "organized sound", understood that the process of composition involves integrating multiple levels of organization, where any given level can be designated (parameterized) by a time of duration; from the duration of a pitch or rest up to the time duration of the entire composition. Within this duration, elements are structured and layered with purpose and order such that the listener can grasp the music's various and diverse intents. To explain how this musical organization can be of benefit to the rigorous demands of cetacean acoustic research, we can create a composition whose principles of organization are derived solely from the inherent rhythms, patterns and sounds of cetacean vocal behavior. From this point of acoustic re-organization, we can hear how various attributes of vocalizations compare and contrast to one and another. For instance in the case of Humpback Whales, how frequencies in Feeding Calls match or mingle with each other or how select phrases of the Winter Song, when layered and stretch, begin to evolve and mutate. By following this particular method of organization, the composition becomes not just a creation of its composer, but a sum total of the attributes present in the source material. This re-alignment and re-organization of material reveals qualities of vocal behavior that may not become evident through more traditional means of analysis and serves as a point of comparison between human and cetacean acoustic ecologies.