

# The Common Bottlenose Dolphins (*Tursiops truncatus*) Song

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## Abstract

A 1.5-hour recording of six (Gulf of Mexico) captive common bottlenose dolphins (*Tursiops truncatus*) at Sea Life Park, Hawaii shows that: 1) they have a song of a sequence of tonal (often slurred) notes. The evidence for their song comes from: a) their emitting songs that were complex (both tonally and rhythmically), b) their likely improvising (as inferred from their most complex songs not being repeated), c) songs based on a theme (used repeatedly), d) a bout of singing (at times) including social creativity, e) songs with a distinct beginning, middle and end section, and f) one song consisting of in part, a theme, 2) their songs are not sung in key (as determined from analysing the beginning tonal value of a note with spectral-frequency analysis), and 3) are sung in bouts, and 4) mostly with tonal-striated vocalizations (in the literature termed squawks and bray calls). Their apparent creativity (likely improvisations) and social creativity are of importance to how they evolved cognitively, to the study of song culture (between populations and delphinid species), understanding their (intra and inter-species) associations, and kinds of relationships, determining individual personalities, and perhaps will provide supporting evidence for their ability to reason. As inferred, they sing without being intentionally manipulative from: 1) their use of Gquic psychology [1] (as explained in this article), and 2) as inferred from their likely having an ability to reason [1] [2] (as deduced from their behavioural ecology (their unique exceptional evolutionary freedom), including their comparatively peaceful composure between conspecifics, in line with the proof of The Peaceful Composure Theorem), suggesting (per The Peaceful Composure Theorem) they have an egalitarian-like society. Their interspecies (displaced) aggression towards smaller odontocete species is shown to be a function of jealousies that emerge from their stronger social bonds than other species, from their compassionate nature, and females and males not pairing up in long-term associations. Species with greater cultural freedom are shown to have a more complex song providing further evidence for species culture not crucial to survival. The conclusive evidence for specie culture

from my recent publications is of relevance to the scientific community's acceptance of two new theories of evolution, and Guic psychology. The loud burst-pulse sounds, chasing, charging and raking behaviours described in the literature could be a play behaviour, ought not be labelled as aggressive behaviours, as inferred from dog mock-fight play behaviour. In regard to future comparative behavioural ecology studies, aggressive animal behaviour should only be defined as an act of displacement (that is shown to commonly occur in the Indo-Pacific bottlenose dolphin species (*Tursiops aduncus*)), or as acts of biting, and hitting.

### Keywords

Animal Behaviour, Animal Communication, Common Bottlenose Dolphin Song, Delphinids, Dolphin Behaviour, Ethology, Evolution, Freedom to Intellectualize Theory, Mebir Innate Response, Music, Peaceful Composure Theorem, Psychology, Social Creativity, Sociology, Theory of Cultural and Evolutionary Freedom, *Tursiops truncatus*

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## 1. Introduction

### The Common Bottlenose Dolphins Song

Six captive common bottlenose dolphins (*Tursiops truncatus*) (sourced from the Gulf of Mexico) were recorded for about 1.5 hours at Sea Life Park, Hawaii in 1986. A careful analysis of their tonal-striated calls suggests that at least a population of common bottlenose dolphins from the Gulf of Mexico, or perhaps the entire species, has a song (a complex song at times): 1) composed of a sequence of tonal "notes" (that are often slurred), 2) sung at times in a complex rhythm, 3) that is not (from analysing the beginning tonal value of a note with spectral-frequency analysis) sung in key, and 4) is sung in bouts. That they have a song is determined from some of their songs being based on a theme that repeats, having a beginning, middle and end section to it, and that a longer song can (in part) contain a theme. A song can be sung with different kinds of tonal voices, mostly are sung with tonal-striated vocalizations (in the literature termed squawks and bray calls). Bouts of singing can be minutes in duration, a song can be 6 seconds in duration and can include as many as 18 notes, and as many as 9 different notes.

### The Importance of Common Bottlenose Dolphin Song Social Creativity to How they Evolved Cognitively

That their more complex songs are not repeated, can have a beginning, middle and end section to it, and that they exchange songs with a clear emotional quality suggests that they are likely engaging in social creativity in song and are likely improvising (see **Figure 5**). For free-ranging coastal populations with a small home range, from having an apex friendship-favourable group composition, their improvisations, and social creativity provide a highly efficient mechanism for the individuals of a population to become intimately familiar with all members of the

population, an important vector for refined sexual preferences in the evolution of higher intelligence (per the proof of the freedom to intellectualize theory) [1].

Delphinid species other than the common bottlenose dolphin likely have evolved a song, see Section 5, #6. Delphinids as a taxonomic group have exceptional cultural and evolutionary freedom to evolve a song from: 1) most delphinid species being highly social, an effective defensive mechanism against predation, 2) their scission-coalescing group composition improving sexual preferences, 3) their group composition in an aquatic medium having 3-dimensionality providing a reduction in intrusions of personal space (less stress) [2], and 4) from reductions in intrusions of personal space when feeding. The following evidence for the common bottlenose dolphins likely having an ability to reason, and unique exceptional evolutionary freedom due to their ecology suggest that their song may be more complex than the songs of other delphinids: including from: 1) their apex friendship-favourable group composition, 2) larger delphinid size, and 3) peaceful composure between conspecifics (and reduced intrusions of personal space when foraging). The common bottlenose dolphins peaceful composure is in line with the proof of “The Peaceful Composure Theorem” (which shows that: a) a species with an ability to reason is loving, non-competitive and non-aggressive, and b) that an ability to reason evolves as a function of sexual preferences, and (cultural, and) evolutionary freedom, including from a relatively peaceful composure) [1]. Their displaced interspecies aggression against other species of small odontocete is shown to be a function of jealousies that emerge from their stronger social bonds than other species, from their compassionate nature, and females and males not pairing up in long-term associations.

#### **Common Bottlenose Dolphin Song Culture**

I hypothesize that a comparative study of the song of the common bottlenose dolphin between populations will show that a population’s cultural and evolutionary freedom (its ecology) determines the complexity of a song (determines (common bottlenose) dolphin song culture). There is some evidence for their having differences in song culture between populations, see the last paragraph of Section 8.2. High-stress levels for a population from a restrictive ecology (with restricted cultural and evolutionary freedom) may cause an underdeveloped song culture from: 1) heavy predatory impact, 2) living in a large offshore population that perhaps lessens intimate social interactions, and/or 3) the confines of a narrow fjord causing intrusions of personal space. In Doubtful Sound (a kind of fjord), males are reported as not being aggressive during courtship but are outside of courtship. The stress of living in the confines of a fjord from intrusions of personal space may cause aggression that results in a less developed song. Seeing as though the common bottlenose dolphin has likely had cultural and evolutionary freedom to evolve an ability to reason, both sexes likely sing.

#### **What Is Communicated in Their Song?**

Their songs likely communicate: 1) compassion (as inferred from: a) common bottlenose dolphins likely having an ability to reason [1], and b) the evidence that a species with an ability to reason has a peaceful composure, as per “The Peaceful

Composure Theorem” [1]), 2) that an individual seeks social affiliation, 3) a mood, including: a) excitement, and b) happiness, as inferred from their apparent high-degree of social creativity in song, and their expression of excitement when singing, c) boredom (as inferred they likely experience boredom at times), and 4) past experiences, such as pleasant social encounters, visual, and acrobatic sensationalism, gentleness, a sudden pleasant event, playful physical interactions and awkward moments, as deduced from my improvising music, having the ability to easily communicate about an event with music, and decipher the possible meaning of an improvisation (which had no intended meaning). Evidence is presented for their not being manipulative in song (unlike as with (human) commercial music), from their use of Gquic psychology (including: a) their displaced aggression against other species of small odontocete, but not against their own species (their displaced inter-species aggression as inferred comes from jealousies which emerge from females and males not pairing up in long-term associations), b) their avoidance of conflict with the smaller in size Indo-Pacific dolphin in coastal regions, one of the common bottlenose dolphin’s preferred habitats, these two delphinid species, similar in appearance, have overlapping ranges, c) their social creativity in song when exchanging improvised songs, (humans rarely engage in social creativity because my article on Gquic psychology has not yet been published), and d) that (in Doubtful Sound, New Zealand) they are selective in only engaging in “aggressive” male interactions outside of courtship (as I hypothesize, the possible “aggressive” interactions in “Doubtful Sound” that are not seen in the Sarasota Bay population [1] [2] would be from the stress from living in the narrow confines of a fjord, and the resulting intrusions of personal space)).

#### **What Can Be Learned from the Referential Alarm Call about the Evolution of Language?**

That the prairie dog with a referential alarm call (and other species with a referential alarm call) have territorial disputes and aggressive interactions, has restricted their evolutionary freedom to evolve an ability to reason [1]. That they nonetheless have a rudimentary “language” suggests that a song, and an ability to reason are not a prerequisite to language acquisition in a species. As inferred from two new theories of evolution [1] [2], a referential alarm call evolves as a function of improved fitness (a safety characteristic), or/and as a function of learning, and sexual preferences for those individuals which inherit the behaviour of a referential alarm call.

#### **Future Research on the Song of the Common Bottlenose Dolphin**

From the study of the song of free-ranging common bottlenose dolphins (*Tursiops truncatus*) and the use of a hydrophone array it will be possible to determine the personalities of individual dolphins and their kinds of relationships. Their loud burst-pulse sounds, chasing and charging behaviour, and raking behaviour could be a kind of play-like behaviour, and should not be labelled as aggressive behaviours, as inferred from dog mock fights being a play behaviour. Aggressive behaviours should only be defined as being “acts of displacement”, (that commonly occurs in the Indo-Pacific bottlenose dolphin species (*Tursiops aduncas*)) or “acts of bit-

ing and hitting”.

### **The Misconception: Common Bottlenose Dolphins Are Unkind in Nature**

It is important to bring to the reader’s attention that the common bottlenose dolphin (*Tursiops truncatus*) is known for having infrequent aggressive interactions between conspecifics in Sarasota Bay, US, from a long-term study of their behavioural ecology [1] [2]. Their interspecies friendships (with the spotted dolphin, humpback whale (in Hawaii) and with the short-finned pilot whale) also suggest that they have a peaceful composure (see my forthcoming book on the zoology of the common bottlenose dolphin). The evidence for their having an ability to reason also suggests they have a peaceful composure per “The Peaceful Composure Theorem”. For the evidence that the common bottlenose dolphin uses Gquic psychology, see Section 1, the section titled “What Is Communicated in Song”. The study of the song of the common bottlenose dolphin will likely provide further evidence for their use of Gquic psychology from studies on their social creativity, vocal mimicry, elaborateness on a theme, and “humorous-like” vocalizations (that other species emit, such as the crow and black birds). In the common bottlenose dolphin perhaps humorous vocalizations are more commonly elicited after a disturbing event, such as after the appearance, and then disappearance of a predator<sup>1</sup>.

### **Recent Revelations in the Natural Sciences**

The scientific community will more likely accept: 1) the concepts of animal culture (not crucial to survival), and 2) the concept of cultural and evolutionary freedom [1] [2], 3) the proof of two new theories of evolution (that the concept of natural selection is refuted) [1] [2], and 4) “The Peaceful Composure Theorem (the evidence for a species with an ability to reason being loving, non-competitive and non-aggressive) [1], 5) that higher intelligence evolves as a function of evolutionary freedom and sexual preferences [1] [2], and 6) the importance of employing Gquic psychology and 7) methods of “The Social-Friendly, Learning-Instructional Theory” to improve: a) learning, b) therapy, and c) solving global (societal) problems (see Section 1.1) from: 1) **the evidence** (presented in this article) **for species culture**, including the evidence that: a) the common bottlenose dolphin has a complex, likely improvised song, with at times a beginning, middle and end section, and at times used in social creativity, b) species with greater cultural and evolutionary freedom having a more complex song, suggesting that the complexity of a song evolves as a function of sexual preferences, and c) that the grizzly bear and yellow jackets have the animal culture of an aggressive temperament not crucial to survival (see Section 8.1), 2) **the conclusive evidence presented for species culture** not crucial to survival from my two recently published articles [1] [2], 3) **the evidence that the common bottlenose dolphin uses Gquic psychology** (see Section 1, the section titled: What Is Communicated in Their Song?, and likely has an ability to reason, (as inferred from their uniquely, exceptional (cultural, and) evolutionary freedom, inclusive of their peaceful composure between con-

<sup>1</sup>For humans, mocking an aggressive dog (another species) is socially acceptable, however mocking an authority figure (the alpha male) is not acceptable (personal observation).

specifics, [1] [2], (see Section 5, #6)), and from 4) **the discovery of** the mechanism which explains why Gquic psychology is more effective, and social species tend to evolve higher intelligence [2], *i.e.* **the Mebir innate response** (substantiating both the social brain hypothesis and two new theories of evolution of Nicholovich Rose [1] [2]).

### 1.1. Gquic Psychology

For many reasons as described in Sections 1.1 and 1.2 Gquic psychology (in contrast with Darwinian psychology) is the preferred psychology (if allowed) for societal and political development, inspiring invention, improved interpersonal relationships, and is crucial for raising social consciousness, world peace, and solving global problems. It is first introduced in two publications: 1) in an article on (the discovery and nature of) the “Mebir Innate Response” in 2022 [2], and 2) in an article on the greater effectiveness and the methods of “The Social-Friendly, Learning-Instructional Theory” in 2024 [1]. A forthcoming article on Gquic psychology describes Gquic psychology in detail, titled “Gquic Psychology, The Future of Psychology, and the Enlightenment of Darwinist Psychology (of Behaviourism and Psychoanalytic Theories)” of Nicholovich Rose. Gquic psychology is a new, socially-oriented psychology (designed to release the Mebir innate response from meaningful convivial social interactions), that improves the effectiveness of behaviour, (resembling the adrenaline response) and has a solid theoretic base from being based on: 1) the proof of two new theories of evolution [1], 2) the proof of “The Peaceful Composure Theorem” (which shows humans are loving, non-competitive, and non-aggressive) [1], and 3) its’ design to elicit the Mebir from meaningful convivial interactions. With respect to therapy Gquic psychology is designed to release the Mebir with methods of “The Social-Friendly, Learning-Instructional Theory” [1] which not only characteristically improves behaviour (including the facilitation of improved intellectualizing, sociality, learning, creativity and curiosity), it also provides a better sense of identity, improves interpersonal relationships, and enriches the patients (and therapists) lives (yet Gquic psychology methods need to be tested rigorously before adopted (formally) in therapy). With respect to solving societal problems the methods of Gquic psychology include turning people on to the best solution with an open debate with cited references, devoid of commercial advertising, supplemented with meaningful topics of human interest (which release the Mebir (in both the facilitator and recipient)). As an example, regarding perpetrators of racism rehabilitation can be implemented to better manage racism from the perpetrator of racism working cooperatively alongside the race they discriminated against (cooperative work is shown to reduce aggression) to learn about the beauty and value of the people of the minority group to society. In contrast, proponents of Darwinian psychology idealize integration to deal with racism which is to the demise of the culture of a minority group. From Darwinian, psychology privatization is mistakenly idealized, when safe guards against corruption should be idealized, “civil disobedience” can as prioritized over

large legal demonstrations (as in 2019, with the international Climatic Strike movement in capitalist nations and the “Black Lives Matter” protests in US, ((in capitalist nations) these kinds of people ought not be black-listed, but instead turned on to the greater effectiveness of large legal protests)), in capitalist nations the manipulation of the masses with use of commercial advertising is employed use of to deal with any societal problem (yet commercial advertising is typically misleading), the promotion of competition and the use of self-initiated unkindness, and aggressive interactions are idealized in society (when these are shown to restrict and not uncommonly bar solving global problems). Competition is shown to restrict cultural, evolutionary, political and economic freedom. In contrast, following “The Peaceful Composure Theorem” (and Gquic psychology), the following ought be idealized, an open debate with cited references, devoid of commercial advertising, reciprocal altruism, a well-developed social welfare system with safeguards against corruption, cooperation (which is shown to reduce aggression) (in place of the idealization of self-initiated unkindness), assertiveness, convivial social interactions, creativeness, curiosity, and exploration to help others, and a high level social consciousness [1]. Though Darwinian psychology cannot be forsaken due to an unequal distribution of the wealth globally Gquic psychology (from being better) should be prioritized, if possible. Permission is needed to utilize Gquic psychology because: 1) it is more effective, and 2) the misconception that Gquic psychology and Darwinian psychology are mutually exclusive in the same society (derived from the misconception concerning the promoted mechanism of the refuted concept of natural selection, “the survival of the fittest”. One line of evidence for the concept of natural selection being a misconception is the inference that even characteristics crucial to survival can evolve without selection, e.g. via specialization [1], including the human lung. As inferred, the individual parts of the lung must have evolved separately (without selection) before working synergistically to become a functional lung. The modern complex lung of vertebrates as inferred became crucial to survival from being more efficient (from improving fitness) via specialization, *i.e.* via the old method of respiring in fish (with gills or vascularized gas bladders) going vestigial. “An ability to reason” is shown to evolve via sexual preferences and exceptional evolutionary freedom [1] [2] without selection. There is evidence that the two psychologies are not mutually exclusive from nations with a high level of social consciousness using both (personal observation). Gquic psychology is proven to be better than Darwinian psychology from being based on the Mebir, which improves the effectiveness of behaviour [1], and from its basis on the proof of “The Peaceful Composure Theorem” [1], showing that Gquic psychology is more versatile, less disruptive, speedier, safer and is in harmony with human nature. With use of Gquic psychology there are intrinsically no losers, and helping the individual is idealized (two important distinctions between the Gquic and Darwinian psychology). Gquic psychology better improves interpersonal relationships, provides a lasting, and a better sense of identity, and it enriches people’s lives via improving learning, intellectu-

alizing, sociality, creativity, curiosity, playfulness, and exploration (from the Mebir innate response). Gquic psychology is not only beneficial: 1) to therapy, and 2) teaching, it is also crucial for 3) raising social consciousness (in the era of the global capitalist economy, and possible mind reading of the capitalist secret police), 4) world peace, and 5) solving global problems.

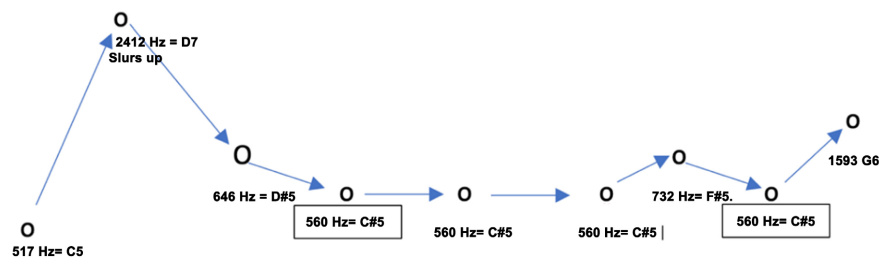
### **1.2. Gquic Psychology Is More Effective than Non-Social Rewards**

The evidence for Gquic psychology being more effective than non-social rewards include: 1) its design to release the Mebir, and the many kinds of improved behaviours as Mebir responses, elicited from convivial social interactions, including improved {1} learning, {2} intellectualizing, {3} memory, and the elicitation of {4} sociality, {5} creativity, {6} curiosity, {7} exploration, {8} playfulness, and perhaps, {9} concentration [2], while at the same time, 2) the use of Gquic psychology has a positive feedback loop that self-perpetuates its' beneficial effects, *i.e.* from improved sociality, 3) shown to be more effective than non-social rewards from the behaviours of dogs. In dogs (and in humans (personal observation)), a small stimulus can produce dramatic behavioural responses, which in physical activity resembles an adrenaline response [2]. However, for humans the Mebir is best elicited from convivial interactions that are of human interest (that promote a high level of social consciousness) as I learned as a teacher at universities and colleges in China [2]. Only friendliness to students is not sufficient enough to release the Mebir during a lesson (as inferred, this is because it is not interesting enough in of itself), 4) the proven greater effectiveness of the methods of “The Social-Friendly Learning-Instructional Theory” [1], 5) that Gquic psychology is based on the Mebir which substantiates the social brain hypothesis, and “The Freedom to Intellectualize Theory”, (which invalidates the social competition theory) (the Mebir substantiates “The Freedom to Intellectualize Theory” from providing the mechanism for how intelligent-like behaviours are sexually preferred) [1], 6) the achievements of Freud and Spotnitz (Spotnitz) in using social interactions to cure “incurable” psychological disorders, and 7) that meaningful social interactions (*i.e.* the methods of “The Social-Friendly, Learning-Instructional Theory”) in therapy to release the Mebir enriches people’s lives, provides an enduring sense of identity, and improves interpersonal relationships. Gquic psychology is not formally used in therapy (as of the year 2024) yet ought to be (if permitted, *i.e.* after the methods of Gquic psychology are tested rigorously) and has many practical applications to society as discussed in Section 8 and Section 1.1, crucial to solving global problems, and raising social consciousness.

## **2. The Song of the Common Bottlenose Dolphin**

From having reviewed and spectral-analysed a 1.5-hour recording made in 1986 of six, adult captive common bottlenose dolphins (*Tursiops truncatus*) (sourced from the Gulf of Mexico) at Sea Life Park, Hawaii, and from having also reviewed and spectral-analysed a recording of captive common bottlenose dolphins from

the British Library, London, Britain (also sourced from the Gulf of Mexico) I discovered that **the common bottlenose dolphin from the Gulf of Mexico and perhaps as a species has a song consisting of a tonal sequence of notes** that are not (as inferred from an initial analysis of their songs with spectral-analysis), sung in key. Nevertheless, their songs **have an observable rhythm** (see **Figure 1**), can be almost a minute in duration, can include many notes (as many as 17) and can include as many as 9 plus different tonal notes (for the web address of audio clips the author made of captive common bottlenose dolphin songs, see references [3]-[6], which include examples of their song's complexity, playful-quality, mimicry in song, and the social creativity of some of their songs). Some of their songs were mimicry of, and an elaboration upon a series of tonal gate clanks of a gate in the tank (often heard on the recording). A clank often had the tonal value of "A" or "F", which the common bottlenose dolphins could mimic in their songs following a series of gate clanks.



**Sounds like an improvised song, and like it has syncopated rhythm (off beat twice before returning to the original beat pattern)**

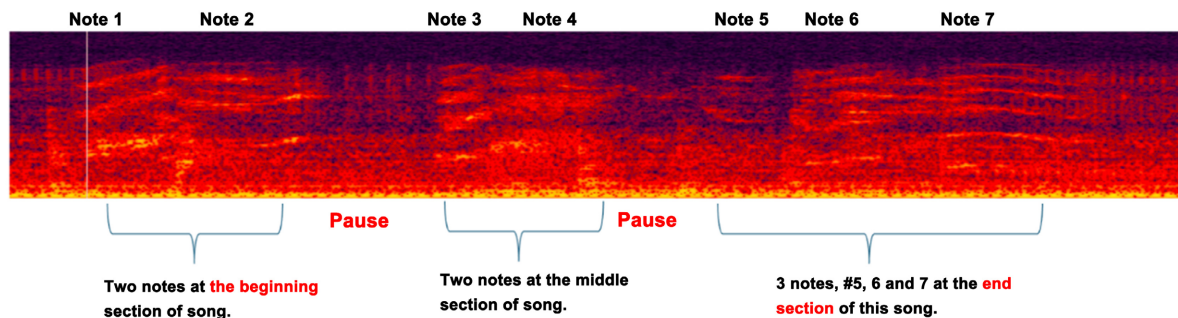


Frequency values of notes from. <http://www.simonpaul.com/wp-content/uploads/downloads/2010/04/Notes-To-Frequencies.pdf>  
Recording location 2:33:043

**Figure 1.** A nine-note song of a captive common bottlenose dolphin (from a recording of 6 individuals held in a large pool at Sea Life Park, Hawaii) depicted both diagrammatically and on a musical staff. The song in **Figure 1** is sung with six different notes, is not sung in key (the tonal values of the musical staff are determined from analysing the tonal value of the leading frequency of a note, with frequency analysis). It contains a beginning section, a middle section and an end section. The "zero" of the upper diagram represents a note. The relative vertical axis of this diagram indicates the relative tonal frequency compared to a subsequent and prior note, and the horizontal axis indicates relative time. This method of depicting the notes of a song is a quick way to look for patterns of similarity between songs.

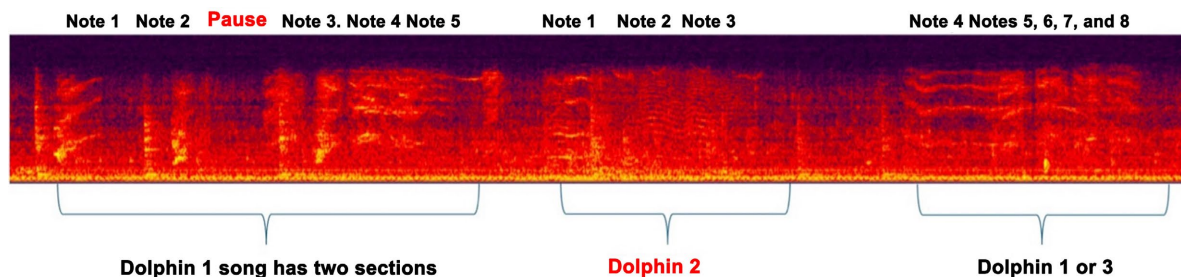
Below is an example of a song with 17 notes from the Sea Life Park recording (the first song of the recording of common bottlenose dolphin songs, see references [3]-[6]). The evidence that they are improvising includes the complexity of many of their songs, which are not repeated, and the sounds of excitement associated with a song.

Below is another example of a song consisting of a beginning, middle, and end section (**Figure 2**).

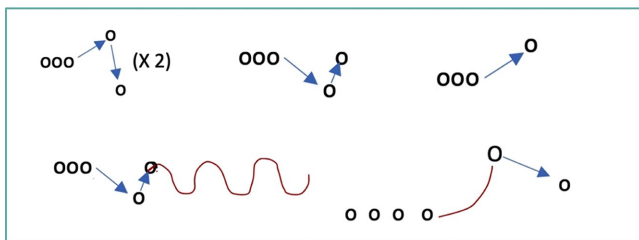


**Figure 2.** The quality of the tonal striated notes of this song were similar, suggesting only one animal was singing a song which has a beginning, middle, and an end section. Most of the tank gate clanks were edited out.

The recording from Sea Life Park suggests that **vocal mimicry can occur when they are singing**. They also engage in **social creativity** with melodies (which humans commonly engage in with intonation, and in body language, but not commonly in the creative arts). Below, **Figure 3** is an example of social creativity in the exchanging of melodies. Though jazz uses social creativity, it is more a variation of themes (which the common bottlenose dolphins also does see **Figure 4**) rather than the exchange of improvised songs. The warbling vireo also sings like a jazz musician, in having variations on a theme, for an example of the song of the warbling vireo go to the Macaulay Library website, type in the species name in the search bar, *Vireo gilvus* and go to the third row of the first page, *i.e.* to the recording of Marvin Elliott. For humans, meaningful social creativity (not just variations on a theme) in non-commercial music, and the visual arts, and in the literature is a possibility for the future, with the advent of Gquic psychology [1] [2]. That their songs are highly complex: 1) is suggested in the 17-note song of **Figure 5** that consist of two theme patterns. For the kinds of theme patterns used in this song, of three (or four) introductory, notes and then a variable ending (eight times used during the recording) see **Figure 4**, and 2) from some of their songs having a beginning, middle and end section to it, see **Figure 1**, **Figure 5**, and **Figure 6**.

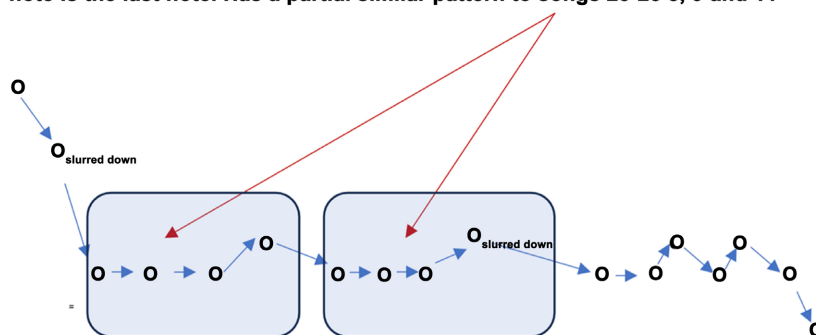


**Figure 3.** This spectrograph suggests that two or three common bottlenose dolphins are exchanging songs in social creativity (the tonal narrow-banded notes of dolphin 2 noticeably have many more overtones, suggesting a different dolphin). For the likely meaning of their songs, see Section 6. The first song (of dolphin 1) consists of 5 notes and has two sections, there is a pause between the first section (consisting of two notes) and the second section (consisting of three notes) of this song. This evidence for an exchange of songs is evidence for social creativity, of importance to the natural sciences to how the common bottlenose dolphin species evolved cognitively, to the study of common bottlenose dolphin culture (between populations), to learning about (intra and inter-species) associations and relationships, to understanding an individual’s personality, and perhaps will be of importance to providing further supporting evidence for their having an ability to reason.

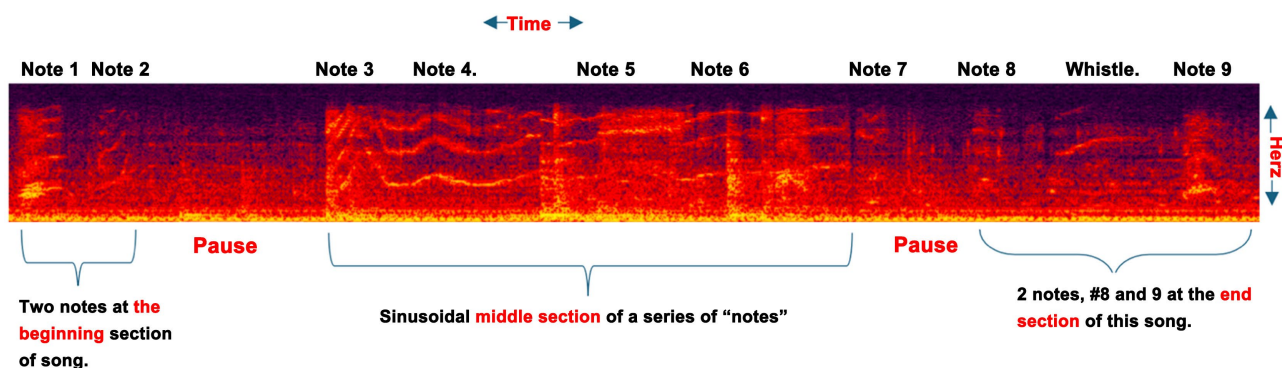


**Figure 4.** An example of five songs of the six captive dolphins, based on a similar theme, indicates that the common bottlenose dolphin is creative, in a way that is like jazz, and provides a line of evidence for their improvising. The vertical axis indicates the relative tonal frequency compared to subsequent and prior note, the horizontal axis indicates time.

**Seventeen note song of one individual. The highest note is the first note, and the lowest note is the last note. Has a partial similar pattern to songs 23-25 8, 9 and 11**



**Figure 5.** Seventeen note song of one individual. That the common bottlenose dolphin sings a complex song that is not repeated, and that a complex song can be associated with a strong emotional-sounding quality suggests they are improvising.



**Figure 6.** The quality of the tonal striated notes of this song were similar, suggesting only one animal was singing. This song had a beginning, middle (a sinusoidal tonal-striated note), and an end section to it. Most of the tank gate clanks were edited out.

### 3. The Misconception That the Complex Song of Delphinids (and of the Common Bottlenose Dolphins) Are Evidence for the Concept of Natural Selection

To many researchers the discovery that the common bottlenose dolphin (and other species of delphinid) have a complex song suggests that the social competition theory is validated as to how higher intelligence evolves: a) from the common bottle-

nose dolphins displaced aggression against other species of small odontocetes (which as inferred occurs from jealousies which emerge from males and females not pairing up in long-term associations, see Section 1, the Section titled “The Importance of Song Social Creativity to How the Common Bottlenose Dolphin Evolved Cognitively”) (despite that they have infrequent aggressive interactions between conspecifics in Sarasota Bay), b) from the evidence that the Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) is aggressive between conspecifics in a cooperative manner (with 3<sup>rd</sup> order alliances) [7] (despite that the click song of *Tursiops aduncus* (as reported in the literature), is less complex in comparison with other vertebrate and cetacean species, and despite that *Tursiops aduncus* has restricted evolutionary freedom from likely having a more aggressive temperament (as the result of heavy predatory impact over its species range)) [1]. A detailed comparative behavioural ecology study between delphinid species instead provides no evidence for the social competition theory, but rather shows that the common bottlenose dolphin has both unique exceptional cultural and evolutionary freedom, including from having a peaceful composure between conspecifics [1], (that is rare in animals), providing supporting evidence for The Peaceful Composure Theorem, and for the proof of two new theories of evolution of Nicholovich Rose [1] [2], which shows that species evolve in a growth-like manner, as a function of cultural and evolutionary freedom.

The research on two new theories of evolution shows that higher intelligence is in fact a function of evolutionary freedom, and sexual preferences [1]. The mechanism of the evolution is shown to be the manifestation of species culture, not crucial to survival and in the evolution of higher intelligence, the existence of the Mebir innate response, explaining how intelligent-like behaviours are sexually preferred. This article also provides evidence that a more complex song is a function of cultural and evolutionary freedom, suggesting that a complex song evolved as a function of sexual preferences.

#### **4. The Evolution of Higher Intelligence and a Complex Song**

An animal species which has a complex song is not necessarily more intelligent. In this article, a creative original yet simple song (of a species) is defined as being more complex (requiring greater cognitive and communicative skills) than a repeated complex-sounding song. The African Gray parrot (*Psittacus erithacus*) for example is known for its higher intelligence [8], yet the nightingale’s (*Luscinia megarhynchos*) song at first glance sounds far more complex than the tonal squawks of the African Gray parrot. The nightingale has a complex, pleasant-sounding song (to humans). Its song repertoire includes from 180 to 260 different songs [9]. For an example of the song of the common nightingale go to the Macaulay Library website, type in the species name in the search bar, *Luscinia megarhynchos* and go to the bottom of the second page, *i.e.* to the recording of Fernando Rico. The vocalizations of the African grey parrot are more creative sounding from the creation of “new melodies”. For an example of the song-like vocalizations of the Af-

rican grey parrot go to the Macaulay Library website, type in the species name in the search bar, *Psittacus erithacus* and go to the bottom of the third page, second from the bottom, *i.e.* to the recording of Paul Lenrumé. The nightingale is creative (but at a lower level than the African grey parrot), in the order of the songs sung, and with embellishments with over 1000 [10] unique sounds. The African grey parrot has had greater evolutionary freedom to evolve a more complex (more creative) song than the nightingale from only living in tropical regions (from it not needing to migrate to temperate regions to breed, as does the nightingale) where the African grey parrot leads a less stressful life from more abundances of foliage as camouflaging, and greater abundances of food items.

For the evolution of higher intelligence (as a function of sexual preferences) [1] the requirements of cultural and evolutionary freedom are more involved than for the evolution of a complex song. The evolution of higher intelligence is shown to be a function of a high degree of sociality (for example for primates), reduced conflict between conspecifics and reduced predation (for example for the manatee and elephant), reduced stress as a species, (for example, for the bowhead whale, short-finned pilot whale, and the manta ray), a friendship-favourable group composition (from a scission-coalescing group composition (for example, in apes and cetaceans), and apex friendship-favourable group composition, (with respect to the common bottlenose dolphin) [1]) (and perhaps at times evolves from improving fitness (as a safety characteristic)) [2]. As inferred, an elaborate song also evolves as a function of sexual preferences (inferred from species with exceptional evolutionary freedom manifesting a more complex song, and few species having a highly complex song. Thus, as inferred, a song's exceptional elaborateness is more elaborate than needed for improved fitness, identification purposes, to attract a mate, or designate a territory, is not crucial to survival and thus, evolved as a function of sexual preferences. As inferred, a complex song also evolves from an abundant food source (from reduced stress) (for example, for the bowhead, humpback, and beluga whale), and adequate defensive mechanisms (for example, for birds, gibbons, and for many cetaceans). The African Gray parrot, with greater cultural and evolutionary freedom from living in the tropics (from having more food and camouflaging available) has a more complex sounding tonal calls than the monk parrot, which resides in temperate regions, see Section 5, #11. Bird species other than the African Gray parrot which are known for being highly intelligent seemingly evolved a more creative "song" in how they sing a "melody" (in contrast with songbirds). For example, the "song" (tonal vocalizations) of seagulls sound creative (they have cultural freedom from being a comparatively large, social species which consumes many kinds of food items), and genus *Corvus* (crows and ravens) (have cultural freedom from being a comparatively large, social species which consumes many kinds of food times) has a creative-like "tonal song" in comparison with songbirds (personal observation). Nevertheless, certain songbird species are creative but at a lower level of creativity with the order they sing their song repertoire, like the nightingale. The warbling vireo, as stated previously is creative with a theme. I

hypothesize that songbirds with a less complex song have as such from having had greater predatory impact (for example, I hypothesize the seed eating birds in temperate regions are more vulnerable to predation from having reduced camouflaging, so have a less complex song. However, further research is needed to test this hypothesis). In addition, even songbirds with a simple song may be singing creatively yet at a lower level of creativity, e.g. with partial mimicry, only portions of a song being sung, with the frequency of repetition, and the length of a pause between a repetition (personal observation, more research is needed). Researchers have shown that at least for certain songbirds female preference is not a function of the extent of a male's song repertoire [11]. Inasmuch exceptional elaborateness of a songbird's song is shown to at least in part not crucial to survival, some aspect of a more complex song is likely attractive to the female (complex songs likely grow in small increments, from a displaced innate response (from attraction), culturally (via cultural mimicry) and sexual preferences for desirable heritable behaviour. Other researchers have shown that songbird species which are life-long learners are more apt to have a long song [12]. Perhaps life-long learners have exceptional cultural and evolutionary freedom to be creative?

### **5. The Relative Complexity of the Song of Species, Listed from the Greatest Complexity to the Least (*i.e.* from 12 → 1), and Their Cultural and Evolutionary Freedom**

The ranking of the complexity of the songs of animal species (which sing) ought not be considered comprehensive yet is included to inspire future researchers to study the relative complexity of song between species that sing, including between the delphinids. This article has shown that there is a tendency for species with a more complex song to have greater cultural freedom, e.g. for the songbird species, the bowhead whale, the warbling vireo, the bonobo chimpanzee, the sea lion, and the African grey parrot. It is hypothesized that that a creative simple song requires a greater degree of cognitive and communicative skills than a complex repetitive song).

12. **Communism** has highest degree of cultural and evolutionary freedom in human society from being in harmony with human nature per the proof of “The Peaceful Composure Theorem” and Gquic psychology [1] [2]. In part from not being an exploitive system of government and from the governments with a high level of social consciousness (including communist nations) utilizing (in part) Gquic psychology (personal observation). In China and Vietnam government music is played that the people of all walks of life enjoy (personal observation). This kind of beautiful music surprised me because I never heard it before in US nor in other capitalist nations. A nation's kind of music as inferred is a function of cultural freedom. There are many reasons for the complexity of human music, whereas there is convincing evidence that the complexity of animal music is a function of a species cultural and evolutionary freedom (their ecology)).

11. **Common bottlenose dolphins** have cultural, and evolutionary freedom over

other delphinids, and over all species of animal, including nomadic hunters and gatherers, see #6, Section 5, and have evolved a complex song, as described in Section 2, see references [3]-[6]. The monk parrot (*Myiopsitta monachus*) seems to “sing” with tonal squawks much like the common bottlenose dolphins, however, the monk parrot sometimes sings in a very repetitive manner, as sourced from the Macaulay (animal sound) Library website. It is unknown if the monk parrot is singing songs with a beginning section, a middle section and an end section, and/or with themes. However, the monk parrot’s song otherwise sounds very similar to the common bottlenose dolphin’s song and they both “sing” with a similar tonal striated voice [13]. Monk parrots have had exceptional cultural and evolutionary freedom from being highly social, and from colonial nesting [14] (providing them with exceptional evolutionary freedom from heavy predatory impact (from stress)). That the male monk parrot helps with foraging when the female is incubating her egg catch also provides the species with evolutionary freedom to have a complex “song” (presumably both sexes of the Monk parrot emit tonal squawks). From listening to the vocalizations of both the African grey parrot and of the Monk parrot, on the Macaulay Library platform, and from having spent time listening to the monk parrots’ tonal calls in Portugal, the voice of the African grey parrots seems more varied. To listen to the African grey parrots more complex tonal vocalizations go to the Macaulay Library website, type in *Psittacus erithacus* and to the 9<sup>th</sup> page, the sixth row from the bottom to the recording of Luis Weymar Junior. The African grey parrot has had greater cultural and evolutionary freedom from being a tropical species, and thus has greater abundances of food and better camouflaging in dense foliage (has had less stress) than the monk parrot, a more temperate species.

10. **Nomadic herders and hunters** (as inferred are more egalitarian than non-herder hunters and gatherers. from having lower stress levels) seemingly their culture is more peaceful, and perhaps their songs can be more peaceful (as observed from comparing YouTube videos of the Inuit of Russia (herders of reindeer) and of North American Inuit (hunters) (however, more research is needed)).

9. **Nomadic hunters and gathers that were (and that are) not herders** (are egalitarian but perhaps not as much as nomadic hunters and gathers who are herders) as inferred from non-herders leading a more stressful life, which I hypothesize has restricted their cultural and evolutionary freedom. For examples of the music of the Kalahari bushman (hunters and gatherer) see the recording referenced in [15] and for the song of the Inuit (without a comparison of the music between herders and non-herders) see the recording referenced in [16]-[19].

8. **The bowhead whale** (*Balaena mysticetus*) has cultural freedom from stress from living in the arctic where there is an abundance of food, from the arctic being the land of the midnight sun in summer, favourable to phytoplankton, and primary producers (both the humpback whale, bowhead whale and the beluga feed in the arctic and have a complex song). The bowhead has greater cultural and evolutionary freedom than the humpback whale (which has a complex song) to have

a more creative song<sup>2</sup> that the humpback from having less stress (from not fasting for months like the humpback whale, not migrating nearly as far, and from not having fierce male-male combat during the breeding season as does the humpback whale). The bowhead whale also has evolved a higher encephalization quotient.

7. **The humpback whales** (*Megaptera novaeangliae*) have a less creative song, than the bowhead whale, yet still has a long song that repeats and changes from year to year [20]. It has less cultural and evolutionary freedom than the bowhead whale, see 8 [21]. Nevertheless, the humpback whale has evolved a complex song, pleasant to listen to, from having an abundance of food in summer in the arctic.

6. **The Bonobo Chimpanzee and Delphinids** including the spinner dolphin (*Stenella longirostris*), spotted dolphin (*Stenella frontalis*) and Pacific white-sided dolphin (*Lagenorhynchus obliquidens*) emit a series of tonal-like vocalizations. **The Bonobo chimpanzee** has exceptional cultural and evolutionary freedom in comparison to the common chimpanzee from living in a more favourable, stress-free environment, and has less stress from exhibiting less aggressive interactions [1] [2], and it is the most vocal of the great apes, using their voices extensively to express themselves and to communicate with others. Bonobo voices tend to be melodic, in comparison with the common chimpanzee [22]. **Delphinids** (other than the common bottlenose dolphin) have had less evolutionary freedom than the common bottlenose dolphin as reviewed in my forthcoming book on the zoology of the common bottlenose dolphin, from not having the apex friendship-favourable group composition of the common bottlenose dolphin [1] [2], while at the same time, the common bottlenose dolphin is shown to have infrequent aggressive interactions between conspecifics. As inferred from the less friendship-favourable group composition of other delphinids (in comparison to many of the populations of coastal common bottlenose dolphins), and as inferred from the records for aggressive interactions between males in the field of certain delphinid species, and as inferred from “The Peaceful Composure Theorem” [1] [2] other delphinids likely have not evolved an ability to reason. Nevertheless, delphinids in general are known for being intelligent [23], and in general are known to emit “burst pulse sounds (squawks)” [24] (termed tonal striated vocalizations in this article), (the primary voice used in singing for the common bottlenose dolphin). There are recordings on Internet of other species of delphinid which have been described as having a song, including the spinner dolphin, the spotted dolphin and the Pacific white-sided dolphin. The Beluga also has song-like vocalizations. To listen to their song-like vocalizations in the web browser of Internet type: “beluga whale vocalizations NOAA fisheries”

<https://videos.fisheries.noaa.gov/detail/video/6282639097001/beluga-whale-vocalizations?autoStart=true&page=1&q=whales>.

The common bottlenose dolphin has exceptional cultural and evolutionary freedom to evolve a complex song, an ability to reason, and exceptional intelligence

<sup>2</sup>Three Examples of the Creative Song of the Bowhead Whale: <http://qm3b.2.vu/5>, <http://qm3b.2.vu/6>, <http://qm3b.2.vu/7>.

from: 1) (their unique ecology of) an apex friendship-favourable group composition, 2) low predatory impact (in comparison with the Indo-Pacific bottlenose dolphin), 3) being a large species of delphinid, and 4) reduced intrusions of personal space (in comparison with the Indo-Pacific bottlenose dolphin, from more frequently feeding on schooling fish), 5) reduced aggressive interactions, and 6) from having a signature whistle, *i.e.* a method of avoidance of unpleasant encounters between two individuals with an incompatible personality (in a population that circumnavigates a small home range), resulting in an reduction of (a population's) stress levels, so sexual preferences are more refined. The spinner, the spotted and white-sided dolphin may also not have as complex a song as the common bottlenose dolphin (in having themes, a beginning, middle and end section to a song, or from singing in key (it has yet to be verified that the common bottlenose dolphin can sing in key) from not having evolved an ability to reason, and from having reduced cultural and evolutionary freedom.

Before conducting a comparative study on differences in songs between the various species of delphinids it is best to do a comprehensive study between the common bottlenose dolphin (near shore) populations (with a small home range) concerning variable ecological constraints, and between offshore dolphins and near shore dolphins. This will provide a baseline for interspecies comparisons, on the effect of cultural and evolutionary freedom (the effect of a species' ecology) on a species song culture, and how they evolved.

5. **The silvery gibbon** (*Hylobates moloch*) and the **Prairie dog** genus (*Cynomys*) have highly evolved elaborate calls. **The silvery gibbon** has a loud, creative-sounding call, but are less creative-sounding than the song of the animal species listed above (personal observation). The silvery gibbons call sounds like a kind of song from being tonal, the complexity of which is the result of their cultural and evolutionary freedom from being highly agile in the tree canopy. Perhaps their (infrequent) chorusing behaviour [25] serves a social function. For an example of the creative-sounding calls of the silvery gibbon go to the Macaulay Library website, type in the species name *Hylobates moloch* in the search bar, go to the recording on the left, *i.e.* to the recording of Arnoud B. van den Berg. It sounds as though you can hear chorusing on this recording. Their song (like the song of songbirds) is known for designating territories. **The Prairie dog** may have one of the most advanced forms of communication of all natural animal languages [26]. It lives in large colonies up to several hundred individuals, providing friendship favourable group composition, *i.e.* cultural and evolutionary freedom to manifest a complex vocal communication system, a kind of prairie dog culture (language) not crucial to their survival. It is inferred that referential alarm calls are likely not crucial to survival from their being species that have not evolved a referential alarm call [27], suggesting that it either evolved from improving fitness (as a safety characteristic [1] but more likely as a function of the Mebir innate response more commonly being elicited (in a highly social species) as a function of sexual preferences. (Seeing as though convivial social interactions elicits the Mebir of improved sociality,

learning, creativity, curiosity, and playfulness [1], and a referential alarm from being understood, would be a pleasant social experience, the referential alarm could become a kind of animal culture, from being desirable, that potentially can incidentally become a heritable characteristic that does not go vestigial from being sexually preferred).

4. **Songbirds with a complex song**, including the nightingale (*Luscinia megarhynchos*), and warbling vireo (*Vireo gilvus*). These songbirds with their highly complex song repertoire, have relatively drab colouration, providing them with camouflaging (evolutionary freedom) from heavy predatory impact to evolve a more complex song. In addition, each of these birds live in dense foliage as protection from predation (as added camouflaging), they eat insects (a high energy food) and winter in the tropics where they have an abundance of foods in winter. In brief, they have evolutionary freedom from stress to evolve a complex song. The warbling vireo has had greater evolutionary freedom than the nightingale (see below) and evolved a more creative song.

4.1. **The warbling vireo** (*Vireo gilvus*) has more evolutionary freedom from stress than the nightingale from having less intrusions of personal space, and less predatory impact as the result of staying high in treetops where they are camouflaged from conspecifics and predatory impact, where they move methodically, hunting for caterpillars [28]. Perhaps they also have less intrusions of personal space from mostly feeding in their territory. They also have cultural and evolutionary freedom from stress from migrating to the tropical regions in winter where there is an abundance of food in winter. There is convincing evidence that they sing creatively, *i.e.* variations on a theme, and are singing socially. The male's song does not seem to only be used to designate territories, and attract a female as inferred from their perching on a tree branch near me and their silently listening to my improvisations on a blockflöyta. Just after I stopped improvising, they began to sing creatively, based on a theme, suggesting that they were listening to me, and were socially inspired to sing. That they have a more creative song than the nightingale (*i.e.* from using variations on a theme) and have greater cultural freedom from than the nightingale from reduced intrusions of personal space, and from reduced predatory impact (from feeding in the canopy of a tree), suggests that their cultural and evolutionary freedom allowed them to evolve a more creative song.

4.2. **The nightingale** (*Luscinia megarhynchos*) has a complex song, consisting of 190 songs on average [29], which are creatively sung with over 1000 unique sounds [29] (sound voices (calls)). Though they are not being as creative as the warbling vireo in song, the nightingale is nonetheless, as inferred creative with the 1000s of unique calls they make, and as I hypothesize, with the order they sing their song repertoire. In contrast the warbling vireo (which has greater cultural and evolutionary freedom), is more creative from creating variations on a theme, and seems to sing socially. The nightingale feed on high energy food, insects but in open areas, where it is more vulnerable to predators and perhaps as well, is more apt to be sub-

jected to intrusions of personal space when foraging, from their being highly visible to conspecifics in open areas. It migrates in winter to tropical Africa [30], where there are greater abundances of insects in winter, providing evolutionary freedom (from a reduction of overall stress). High stress levels of the nightingale best explain why they have a less creative song than the warbling vireo.

### 3. Songbirds (with a less complex song), wolves and California sea lions.

3.1. **The California sea lions** (*Zalophus californianus*) have evolutionary freedom to evolve a “song” which is sung in a social context (with tonal vocalizations above water, and with more varied sounding tonal songs underwater, as I learned from a researcher studying pinnipeds), from being a large, social predator, which is in contrast with the harbour seal (*Phoca vitulina*), which does not have as pronounced “tonal calls”, as I hypothesize from having restricted cultural and evolutionary freedom due to greater predatory impact, *i.e.* from not being as large and not as fast a swimmer as sealions [31] [32]. For a recording of the sounds of the harbour seal, type in the search bar of the Internet browser: “Harbor Seal Sounds-Ocean Conservation Research”. For the loud, above-water tonal vocalizations of the Sea Lion, type in the search bar of the Internet browser “California Sea Lion-Discovery of Sound in the Sea”. I have played the guitar and the blockflöyta near a group of resting California sea lions at “Pier 39”, in San Francisco and my improvisations make them “sing” loudly above water, suggesting that their calls have, at least in part, a social function. Mice and racoons also seem to have creative-sounding tonal vocalizations (posted on Internet). As a graduate student a guest speaker played the underwater songs of the sea lion (they have highly evolved cognitively [33]); their tonal vocalizations underwater are more complex sounding than the song of the wolves, and racoons (which are social species), as I hypothesize, from reduced stress, from reduced conflict between conspecifics when feeding.

3.2. **The wolf** (*Canis lupus*) unlike felines (cats) (*i.e.* other than the lion, a social feline), has evolutionary freedom to evolve a song that at times is sung in a social context, in part used help wolve locate each other at a distance. Their song is not as complex as the common bottlenose dolphins, humpback whales, bowhead whales, the nightingale’s, sea lions, and the chimpanzees. For a recording of the more creative songs of the chimpanzee, which have greater cultural and evolutionary freedom than the wolf to evolve higher intelligence and a more complex song-like vocalizations from living in a scission, coalescing group composition, and presumably, from having less conflict between conspecifics when feeding, go to the Macaulay Library website, type in the species name Pan troglodytes in the search bar and scroll down to the first recording on the left, *i.e.* of H. H. van de Rijt-Plooi.

3.3. **Songbirds** with a less complex song nonetheless have greater evolutionary freedom than most animals to frequently sing their less complex song, from having an ability to fly and hide from predators in foliage, *e.g.* in the safety of foliage (it is the male that sings in temperate regions, from having cultural and evolutionary freedom from predation from having less parental investment (than the female)). Though the (male’s) song is known for being sung in territorial disputes,

and for the male to attract a female I have found that their song is also at times used socially, as inferred from the song of one songbird species inciting another songbird species to sing (personal observation in Mill Valley, California in the spring time), and because certain songbird species partially mimic my improvisations (suggesting that singing is in part a pleasurable, social experience, at least at times to certain songbird species). For tropical species of songbirds both sexes commonly sing [34]. Though this is explained in the literature as evolving from improving fitness it is more likely a function of the tropical species having greater evolutionary freedom from greater camouflaging of the lush tropical environment that provides both the male and female with greater protection from heavy predatory impact so that the female (the sex with greater parental investment) has also acquired a song via sexual preferences, the species having exceptional evolutionary freedom from predation, and a song eliciting Mebir responses which are desirable to the species. Supporting evidence for this comes from the proof of two new theories of evolution [1] and that the endemic tropical species of birds tend to more commonly evolve colouration patterns (from the data I collected), suggesting that the elaborateness of a songbirds' song and colouration patterns evolves from being desirable to the species, as a function of sexual preferences, and that at times the song is likely used in a social context (as inferred, for a bird species, green or drab dark coloration would be the best camouflaging, over a bright colouration pattern, which at least at times is highly conspicuous).

2. **The blue whales** (*Balaenoptera musculus*) and fin whales (*Balaenoptera physalus*) (baleen whales) have restricted evolutionary freedom from feeding in regions with lower primary producer productivity (outside the arctic region, causing some degree of stress, and from being a more cosmopolitan (less social) species in summer, and perhaps during the breeding season in comparison to the humpback and the bowhead whale (also baleen whales) and have not manifested a complex song. In contrast, the humpback and bowhead have complex and interesting songs, see #8, and #7, from, as inferred having less stress as a species, from feeding in the arctic where there is an abundance of food (*i.e.* primary producers which they feed on) from the long days in summer, perhaps from more frequent encounters when feeding in the arctic in summer, from being a less cosmopolitan species than the blue and fin whales, and perhaps from having a more well defined breeding ground, resulting in more frequent chance encounters (greater sociality).

Though the blue and fin whale evolved a less complex song, nonetheless, the fin whale has synchronized rhythms in song, as stated in an interview of a researcher, Miriam Romagosa from the university of Azores about the song of the fin whale, and as I hypothesize synchronized rhythms in the fin whale are the result of fin whale cultural mimicry as a Mebir response, that is more subtle, and different than innate motor and vocal mimicry (that some animals are known to have), *i.e.* the fin whale as inferred mimics each other as a sign of affection. From the fin whale song having synchronized rhythms, and the concept of cultural mimicry, I have formulated the hypothesis that for a social species, the Mebir helps facilitate development of animal culture, even if the species is not known to engage in motor

and vocal mimicry.

1. **Crickets and frogs** have evolutionary freedom to have a repetitive song that is not very complex, yet suitable for finding a mate.

### **The Highly Social Primates and Birds have Evolved to Be More Vocal as a Mebir Response**

Highly social primates and birds tend to be more vocal [35]-[37]. I hypothesize that this is in part from “vocal behaviours” being enjoyable to a social species as a Mebir innate response.

## **6. Lessons from the Common Bottlenose Dolphins Song and Ability to Reason**

### **What We Can Learn from Common Bottlenose Dolphin Displaced Aggression against Small Odontocetes and Convivial Nature between Conspecifics**

We can learn something from the common bottlenose dolphin likely having an ability to reason and their exceptional displaced aggression against smaller odontocetes, from their jealousies which emerge from females and males not pairing up in long-term associations, *i.e.* that a higher level of social consciousness is of importance to human society to reduce aggressive interactions from jealousies that emerge due to competition in society. This is also inferred from the great apes which likely do not have an ability to reason [1] [2]. The chimpanzees which are known to engage in warfare have a scission-coalescing (highly social) group composition, but the orangutans and the gorilla (also highly intelligent apes) do not engage in warfare, and do not having a scission-coalescing (highly social) group composition, suggesting that intrusions of personal space when feeding caused high levels of stress in primates, and that for humans a higher level of social consciousness is of importance to reduce aggressive interactions from jealousies that emerge due to competition in society.

### **Does the Common Bottlenose Dolphin Have a Language?**

Insomuch the common bottlenose dolphin has likely evolved an ability to reason (see Section 5, the section titled “The Bonobo Chimpanzee and Delphinids”) and are not being manipulative in song (see Section 1, the section titled “What Is Communicated in their Song”), they are as inferred intentionally and subconsciously communicating about important, interesting and pleasant experiences they had in the past. This can be defined as being a kind of “musical language”. For example, it seems likely that: **an exchange of songs** symbolizes cooperative behaviour (that is enjoyable from the release of the Mebir) which they are known to engage in when feeding. **Chorusing** likely symbolizes affection and love (which are enjoyable from the release of the Mebir), **a pause in singing** as inferred likely communicates intellectualizing (which is enjoyable from the release of the Mebir), **singing with whistles** (which I have heard, whistle have less overtones) not unlikely symbolizes kindness, such as epimeletic behaviours, for example, the act of helping a sick individual to breathe when sick, (that is enjoyable from the release of the Mebir), **a song with a strong beat** likely symbolizes the assertiveness that is

needed to deal with a life threatening predator, **a song that is more creative** likely symbolizes the beauty of life from not having to contend with the aggressive interactions that a species without an ability to reason engages in, **a song with an unpredictable pleasant melody** likely symbolizes the meeting of a friend when a population circumnavigates a small home range (a friendship-favourable group composition), **a song that is sung playfully** likely (unintentionally) symbolizes their acrobatic play behaviours, **a song that is sung with a comical voice** is perhaps ridiculing the unkindness (the aggressiveness) of a predator. Though communicating in itself does not necessarily release the Mebir (personal observation), communicating about the importance of a high level of social consciousness in the arts, and with music that the listener likes is highly effective in releasing the Mebir (personal observation). That the common bottlenose dolphins likely have an ability to reason and that at Sea Life Park they had a lasting bout of singing with likely improvised, emotional songs, and at times engaged in social creativity for over 30 minutes suggests that they value highly being creative, socially creative, have an egalitarian-like society, and that their singing and social creativity reduces boredom. Perhaps a song can consist of as few as 1 or 2 notes? For the common bottlenose dolphin, as inferred, social creativity in song is the best way to reduce boredom: 1) from their likely having an ability to reason, from being an expression of love, that release the Mebir response, and 2) from the act of collaborating releasing the Mebir. The common bottlenose dolphins are likely intellectualizing about the possible symbolic meaning of a song, even if the song does not have any intended symbolic meaning. Is the common bottlenose dolphin vocally communicating symbolically with nouns and adjectives (like the language of the Prairie dog's alarm call) [38], about the kind of predator there is, and the physical characteristics of a predator? Seeing as though bird species, primate species and prairie dog species have evolved a referential alarm call (and have exceptional cultural and evolutionary freedom), that the common bottlenose dolphin has more cultural and evolutionary freedom than any other species (and thus likely has an ability to reason) suggests that it is likely at times communicating vocally certain nouns and adjectives, and that it likely has a referential alarm call.

#### **Are Common Bottlenose Dolphins Communicating Vocally When They Cooperatively Hunt for Fish?**

Some populations of common bottlenose dolphins engage in cooperative feeding called "driver-barrier" feeding, with a division in labour between the individuals of a group, in which the barrier dolphins collaborate with a dolphin herding fish towards them. Just before the "driver-barrier" event whistles are emitted suggesting that the whistles likely communicate either contextually or referentially that the "driver-barrier" feeding behaviour is to commence. Echolocation clicks are thought to be used during "driver-barrier" feeding to help the barrier dolphins to coordinate their efforts [39]. In a study of common bottlenose dolphin barrier feeding in Italy [40], maximum whistle emission rates commenced about 15 minutes before a bout of barrier feeding, perhaps in part communicating excite-

ment, which was also heard when the dolphins broke up a school of fish into two groups, and when they surrounded a school of fish to feed on. The tonal-striated voice was most commonly heard (that are used in dolphin songs) at all stages of feeding. I hypothesize that for coastal populations of common bottlenose dolphins which have a song culture: 1) there is a higher emission rate of improvised songs during social interactions (that occur after feeding) which effectively releases the Mebir, 2) that there is a lower emission rate of unusual voices during social interactions (after feeding), from improvising meaningful songs taking precedence, 3) that there is a lower emission rate of songs during feeding, from the many tasks associated with feeding distracting the common bottlenose dolphin from improvising, and 4) that there is a higher emission rate of unusual voices during feeding, when improvising meaningful songs is a distraction. Yet I hypothesize that unusual sounds in themselves can release the Mebir, but not as effectively as improvised songs from unusual sounds communicating less. Perhaps unusual sound and voices are used to make fun of predators, as therapy. As inferred, a predatory attack is particularly distressing to a species with an ability to reason, and that values their egalitarian society, despite that they have highly effective defensive mechanisms [2]. The common bottlenose dolphin has many large predators, including: 1) the bull shark (*Carcharhinus leucas*), 2) the dusky shark (*Carcharhinus obscurus*), 3) the great white shark (*Carcharodon carcharias*), and 4) orca (*Orcinus orca*). In Sarasota Bay, about 36 percent of the dolphins have a shark bite scar.

From the research done in Florida [39] and Italy [40] on common bottlenose dolphin barrier feeding, it is inferred that the communication signal of whistles symbolizes the desire to commence driver-barrier feeding either contextually or referentially.

## 7. Methods

I recorded songs of six captive, adult common bottlenose dolphins (sourced from the Gulf of Mexico) for over an hour at Sea Life Park in Hawaii in 1986 with a hydrophone, pre-amp, and a high-quality cassette tape recorder. Adobe Audition software was used to analyse the notes of dolphin songs (with spectral and frequency analysis) (that Russian scientists (who are studying the song of the beluga whale) suggested I use for sound analysis). I am thankful to the British Library for allowing me to confirm that the common bottlenose dolphin has a song from listening to their recordings of captive common bottlenose dolphins.

## 8. Conclusions

There is convincing evidence that a common bottlenose dolphin population from the Gulf of Mexico, and perhaps the entire species have a song. Future research on the common bottlenose dolphins song will likely provide further evidence for: 1) species culture not crucial to survival, 2) their egalitarian society, and will reveal in detail: 3) differences in personality between individual common bottlenose dolphins, 4) some of the reason for common bottlenose dolphin intra- and interspe-

cies friendships, 5) that they are using Gquic psychology (and for Gquic psychology being of importance to human and common bottlenose dolphin society), and 6) will show that they use (and the importance of using (in communist and socialist nations which have greater cultural freedom)) social creativity to relieve boredom. In capitalist nations, there is a general dislike for Gquic psychology (described in Section 1): 1) because people of capitalist nations commonly use revenge, self-initiated unkindness, and discrimination for therapy, 2) have a phobia of egalitarian societies (from feeling guilty that they do not have an egalitarian society), and 3) because of the misconception that Gquic psychology and Darwinian psychology are mutually exclusive in the same society (from the proposed mechanism of the refuted concept of natural selection “the survival of the fittest”). It is my hope that: 1) with the publication of this article on the songs of the common bottlenose dolphin, from popularizing the conclusive evidence I have presented for species culture (not crucial to survival) (in this article and in my other publications), and 2) from the discovery of the Mebir innate response, which substantiates the social brain hypothesis, and substantiates “The Freedom to Intellectualize Theory” from providing the mechanism for how intelligent-like behaviours are sexually preferred, the scientific community and the masses of capitalist nations will expect the proof of two new theories of evolution upon which “The Peaceful Composure Theorem” and Gquic psychology are based. The two new theories of evolution and “The Peaceful Composure Theorem” are based on the concept of species culture, not crucial to survival. Gquic psychology (as the result of being based on the Mebir) is not only more effective, speedier, less disruptive, and more versatile, it raises social consciousness (shows that a comprehensive social welfare system with safeguards against corruption is of importance). Gquic psychology is critical for raising social consciousness, and sustainable world peace in this era of the global economy, and the possible mind-reading capabilities of the capitalist secret police. There needs to be a new, and effective United Nations based on Gquic psychology (inclusive of a global vote), which is adopted from proving its effectiveness.

The evidence that species with a complex song tend to have greater evolutionary freedom (see Section 5) provides evidence for: 1) species culture, not crucial to survival, 2) evolution as a function of sexual preferences, and 3) that species have variable degrees of evolutionary freedom between species.

### **8.1. Other Evidence for Animal Culture Not Crucial to Survival**

There is conclusive evidence for species culture not crucial to survival presented in this article, and in my other publications [1] [2]. Three further lines of evidence for animal culture (in addition to the the evidence presented in this article for animal culture from the complex song of the common bottlenose dolphin, and from animal species with exceptional cultural and evolutionary freedom having a more complex song) comes from three species that both scientist and non-scientists are familiar with, 1) the grizzly bear (*Ursus arctos horribilis*), 2) the yellow jacket and 3) the chimpanzee. 1) **The grizzly bear** has the culture (not crucial to survival) of

a more aggressive temperament than the brown bear (*Ursus arctos*) despite that both bear species have evolutionary freedom from heavy predatory impact from being large predators. Multiple experts believe that food scarcity makes grizzly bears more aggressive, e.g. in comparison to the well-fed coastal brown bear populations [40], and that the grizzly bear's less well-defined and larger territories (in comparison to brown bears) (*i.e.* the grizzly's more frequent intrusions of personal space from territorial disputes) makes it more aggressive [41]. The grizzly bear's more aggressive temperament, if innate, evolved from improving fitness, but is not crucial to survival (is a kind of grizzly bear culture).

2) With respect to **yellow jackets** *Vespula germanica*. The honeybee does not have an aggressive temperament when you bump into them accidentally while they feed on a flower's nectar (personal observation). The bald-faced hornet is also not known to be aggressive. However, they both are aggressive if you bump into their hive. The honeybee and the bald-faced hornet have less stress when foraging, the honeybee from feeding on a reliable food source, on pollen and upon honey (from the hive), and as for the bald-faced hornet, from having a varied diet of nectar and insects [42]. The yellow jackets however have an aggressive temperament [43], for example, they will sting unprovoked [44] and experience stress as a species, in comparison to the honeybee and the bald-faced hornet in two ways:

1) I hypothesize the yellow jacket experiences more stress than the honeybee from a less reliable food source, and their young rely on animal protein (in contrast to the adult and young honeybee, which have a more reliable food source). This best explains the more aggressive temperament of yellow jackets.

2) Yellow jackets, in comparison to the bald-faced hornet, have a more restrictive diet (they feed on fruit and flower nectar [45] (not on animal protein), and do not store away honey in a hive, whereas the bald-faced hornet feed on both) [42], again suggesting that greater stress due to food scarcity in the yellow jacket causes them to have a more aggressive temperament.

For the evidence that **chimpanzee** warfare is a kind of animal culture that is not crucial to survival, manifested from intrusions of personal space, see Section 6.

## 8.2. How a Song and a Complex Song Evolves

I hypothesize that the song in a species first evolves as a function of sociality, from pleasant social vocal calls, this is "The Song Manifestation from the Mebir" (SMFM) hypothesis, which suggests that a song originally is manifested from cultural mimicry not crucial to survival. There is convincing evidence for cultural mimicry not crucial to survival from species with exceptional evolutionary freedom more commonly evolving elaborate characteristics [1] [2]. The SMFM hypothesis is derived from 1) the convincing evidence for cultural mimicry, 2) the discovery that the Mebir response which provides the mechanism for how more complex song behaviours are sexually preferred [1], 3) from the song of the humpback whale, it has had cultural and evolutionary freedom to evolve a highly complex song from reduced stress, from feeding in the arctic, where there is an abundance of food, from

the arctic being the land of many more hours of sunlight in summer, where there are high abundances of plankton, and from likely having a more social existence, 4) from the fin whale, and blue whale having a more primitive “song” and their reduced cultural freedom, from not feeding in the arctic, and from likely having a less social existence 5) the beluga, bowhead whale and humpback whale feeding in the food enriched arctic and having a complex song, 6) the bowhead having less stress than the humpback whale and having a more creative song [1]. 7) In support of the SMFM hypothesis, I find that animals like gentleness of voice, which as I hypothesize, in the evolution of a song is precursor to the evolution of an innate complex song. The study of how a complex song evolves in songbirds suggests that elaborateness evolves in increments (see Section 4) as a function of displaced innate responses culturally. However, a healthy-sounding song likely improves fitness when a song affects sexual preferences, designates territories, and/or improves sociality. 8) In support of the SMFM hypothesis, there is evidence that those animals with exceptional cultural evolutionary freedom have a complex song, suggesting that a complex song evolves as a function of it being enjoyable, and as a function of sexual preferences for heritable complexity (*i.e.* in species with cultural and evolutionary freedom). Yet, the song of the common bottlenose dolphin is, as inferred, not manipulative, as inferred from their likely having an ability to reason and their use of quick psychology (see Section 1, the section entitled “What Is Communicated in their Song”).

### **8.3. How a Complex Song Can Affect Cognitive Evolution**

The complex song of the bowhead whale and the common bottlenose dolphin (and their exceptional evolutionary freedom in other ways), as inferred, results in the evolution of higher cognition via refined sexual preferences. The common bottlenose dolphin likely evolved to be more highly evolved cognitively than humans from their engaging in social creativity with (likely) improvised songs that release the Mebir, from their having an apex friendship-favourable group composition [1], and from their peaceful composure between conspecifics (unlike human society, post 10,000 years ago, post the agrarian mode of existence, and advent of pronounced territoriality and materialism). The evolution of a song and an ability to reason is not a prerequisite for the evolution of a “language”, see Section 1. The common bottlenose dolphins apparent creativity (and likely improvisations) and social creativity in song communicate much information, and thus is of importance to how they are evolving cognitively as a function of sexual preferences.

### **8.4. Future Research on Song Culture in Delphinids**

A comparative analysis of the song between common bottlenose dolphin populations could reveal that cultural and evolutionary freedom (their ecology) determines the kind of song culture of a population (see Section 1, the section titled “Common Bottlenose Dolphin Culture”). A comparative study on the bray calls

(tonal striated vocalizations) between two populations of common bottlenose dolphins done in Italy [46] suggests there are differences in the quantity of brey calls emitted, providing evidence for common bottlenose dolphin “song” culture between populations. Seeing as though the common bottlenose dolphin likely has an ability to reason, as inferred from their behavioural ecology, they ought not, as per the proof of “The Peaceful Composure Theorem”, be harassed in any way (e.g. be harnessed), nor be held captive in any nation (in the future). The best method to obtain this goal and solve the many global problems effectively is from establishing a new United Nations, based solely upon Gquic psychology, including the method of a global vote.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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