

Eine Kleine Naughtmusik: How Nefarious Nonartists Cleverly Imitate Music

Dave Soldier

Because there is only so much that can be brought forth from a single human composer before a certain sameness sets in, dissatisfied musicians have always sought collaborators. Mozart stole melodies from his pet starling, paying the bird's commission in seed. Who, Mozart or the bird, was the great Viennese composer? Or, which one was responsible for creating the *genuine music*?

NAUGHTMUSIK, THE STRONG DEFINITION

Once it was easy to define genuine music. *Music* was what Muses made, and *lyrics* were what lyre players made. These idealists led a pastoral, anonymous existence, occupying themselves with the invention of polyphony, new tuning systems and performances during evening raids along the Aegean coast.

Portents of trouble appeared with the polyphonic goth rocker Palestrina, the first known composer (der. Latin *communis* + Fr. *poseur*). Music became stuff that was *composed*. To understand these phenomena, one must deconstruct, or more properly, *decompose* this semantic.

Let us assume that genuine music is Art. As such it excludes the *set of nonart sounds*, or *naughtmusik*. The strong definition of genuine music includes sounds created by "Artists with Intent." That is, composers who *know what they're doing*. The set {genuine music} includes all works by all great composers. Evidently, genuine music stems from the heroic will and effort of Artists who know what they're doing.

To define the members of {genuine music}, we suggest a strong detection protocol in order to protect genuine music from *nichtmusik* infestation. Thus, we must determine if the sounds in question are or are not the work of a true creative Artist. But how can we judge from the work itself whether it was manufactured by a Creative Artist?

A test designed to address an analogous problem was suggested by the mathematician Alan Turing. The Classical Turing Test was a gedankenexperiment proposed to determine if a computer could be considered to possess *intelligence*. In this protocol, TelePrompTers were placed in three separate rooms by the researchers. One room housed a human interrogator, another a human who answered the questions and in the third room a computer that also answered questions. The questions were typed by the interrogator, who received the answers entered by the others. If the human interrogator could not distinguish the unseen computer from another

human, the computer passed the test and earned the adjective "intelligent" [1].

To conduct an Adapted Turing Test, one could play recordings of genuine music and *naughtmusik* without giving any clue to the human auditors regarding which is which. If the human judges detect the fakery, the strong definition of genuine music can be confidently adopted. For results from experimental trials, read on.

COWBIRDS, MOCKINGBIRDS AND THIEVING HUMAN CHILDREN

But first, the cowbird. The female American brown-headed cowbird, *Molothrus ater*, refuses to build a nest, hatch her own eggs or care for her own children. Rather, she deposits as many as 40 eggs per year into nests that belong to other songbird species. She finds the nests either in trees by watching from an aerial observation post or on the ground by flapping her wings and crashing through the forest floor to flush out other mothers. She quickly lays her eggs in their temporarily abandoned nests, and the returning mother raises the cowbird fledglings with her own brood.

So nonhuman adult animals clearly have the capacity to intentionally fool others. But can they fool others by imitating genuine music?

An affirmative conclusion can be drawn from the example of the male Northern Mockingbird, *Mimus polyglottos*. These birds are widespread throughout the United States and love to sing from February through August, take a break between sets in early September and resume singing from late September through early November. An individual male mockingbird (Fig. 1) imitates as many as 200 songs from other sources, including not only other bird species but also sounds from insects and frogs and even mechanical noises [2].

So these nonhuman adult animals can cunningly imitate music that others have created. It is often hard even for experts to distinguish a yellow warbler or a ringing cell phone from a crafty mockingbird.

Another question is whether human animals who are not Creative Artists, such as musically inexperienced juvenile humans, also possess the ability to so closely imitate genuine music that it can fool expert judges. If so, we must take the potential existence of *not-music* as a worrisome reality.

ABSTRACT

The author poses the question whether or not those who are not bona fide artists generate "genuine music." He discusses his research on children, animals and resultant networks that cunningly assemble collections of sounds designed to fool listeners into believing them to be genuine music created by true composers.

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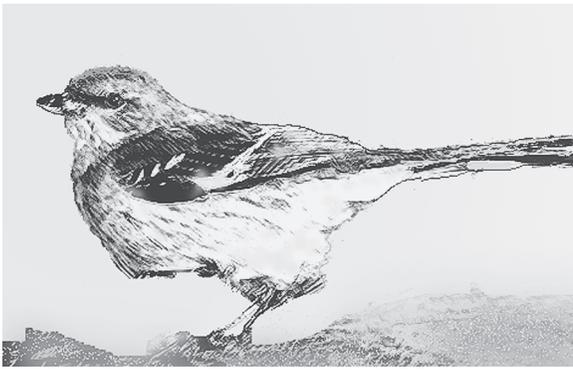


Fig. 1. The male Northern Mockingbird, *Mimus polyglottos*. (Photo © Dave Soldier)

Matarile

A *nichtmusikal* example is *Matarile*, created by a dozen second-generation Dominican-American children, 6 to 8 years old, from Harlem. The kids were thrilled when they arrived at the Acme recording studio in Mamaroneck, New York, with its autographed album covers of Willie Colón and Slick Rick on the walls.

With no knowledge of fifth species counterpoint or sonata allegro form, the children could tell stories, run around and create havoc in the studio without rehearsal. They could imitate cars and different makes of guns—this was an era in the early 1990s when gunshots were heard most evenings in their neighborhood. They also jumped rope and chanted schoolyard rhymes. The schoolyard melody they chose to record, “Matarile,” like “Ring around the Rosie,” is an adorable nursery rhyme about premature death. “Matarile” probably derives from the period of the Spanish wars between the Christians and Ottomans, perhaps 100 years prior to “Ring around the Rosie,” an English tune that likely arose during the bubonic plagues of the 14th century:

Ambos ado mata rile rile rile
ambos ado mata rile rile oh
que que usted mata rile rile rile
que que usted mata rile rile oh

Two of the kids insisted on how the piece was to end: with a patty-cake rhyme whose message contrasts with that of “Matarile”:

Mama mama I feel sick
call the doctor quick quick quick
doctor doctor when I die
call my mama and count to five
I say one-two-three-four-five
I’m alive

The children don’t think of themselves as composers and know no instruments. Yet they craftily manufactured a 9-minute extended work that sounds suspiciously like music. Perhaps, these kids could pose a threat to genuine music?

How does their creation fare on the Adapted Turing Test? The researchers tested it on six musically sophisticated human adults. Five of six correctly chose the genuine music (*Beethoven* #6, first 45 seconds) over 45 seconds of *Matarile*. Thus, the *strong definition* holds for this example, except for one human, who likely was being willfully contrary.

The Tangerine Awkestra

A tougher hurdle comes from the juvenile humans in the Tangerine Awkestra, troublemakers aged 2 to 9 who hail from Fort Greene, Brooklyn, New York. These nefarious tots pose a deeper challenge to the strong definition by producing sounds using instruments. That is, they produce *nonmusical* sounds on *genuine musical instruments* that *they don’t know how to play*.

These children met in a schoolroom, where they listened to records by Ornette Coleman and Roscoe Mitchell of the Art Ensemble of Chicago played by their teacher, Katie Down. The children said they could do that. Down said they could NOT. The kids said can TOO. Down said could NOT and brought her own collection of musical instruments to school.

The kids immediately became Artists and formed a band. With Down and her instrument collection, they had everything they needed, except their parents to drive them back and forth to rehearsals (Fig. 2).

The Awkestra (der. the Brooklyn pronunciation) used Down’s instruments to create a classic of the *nichtmusik* genre, the extended orchestral work *Aliens Took My Mom*.

The day before their studio debut, the kids were informed that making CDs was different from jamming noise in the classroom. There should be a story to guide what they would record. Thus, the intention was to produce a lowbrow programmatic effort rather than highbrow, pure, genuine music.

The children voted between a cowboy and Indian or astronaut subject, and the space story won. They decided that the

story should be one of an alien invasion; and, like a pint-size politburo, they collectively ordered the events.

1. Aliens invade from Jupiter
2. Spaceships over the Empire State Building
3. Volcanoes explode at the center of the earth
4. The aliens blow up Antarctica
5. Aliens took my mom
6. The Navy bombs them
7. All of the humans blow up
9. The aliens get nuclear bugs in them and pop
10. Everything is soft

The Awkestra selected the instruments to be used for each movement, a simple chore, except that some boys wanted to bang on the drums on every tune. The miniature *sovizdat* solved this problem by placing two or three boys on the drum kit.

Note that the term *collective composing* is an oxymoron, as Art clearly stems from the heroic will of the individual Artist. No claim is made that a child syndicate created genuine music, only that they produced nonmusical sounds cunningly arranged to fool listeners into thinking that they are hearing music.

Now for the results from the Adapted Turing Test. In front of five sophisticated adult humans, the researchers played two recordings by acknowledged great musicians from the Knitting Factory label, alternating with the Tangerines. The majority of humans identified the genuine music correctly in 5 of 8 trials, and chose the *not-music* in the remaining three. This frequency of correct choices was too low to reach a statistically significant level of detection of *noughtmusik* infestation (Fig. 3). Indeed, the true failure rate might have reached 50%, if not for an artifact—that in some recordings, little-kid voices could be heard in the background.

Unfortunately, because the Adapted Turing Test does not provide ironclad protection from the Tangerine Awkestra, we cannot distinguish creators who are Artists from those who cunningly pretend to be Artists. Therefore, the strong definition of genuine music is untenable.

NAUGHTYMUSES, A WEAK DEFINITION

Clearly, we must divine a definition of genuine music. If this were a test of human intelligence, we could conduct an Inverse Turing Test by asking the computer if a human were at the other TelePrompTer. However, available CD

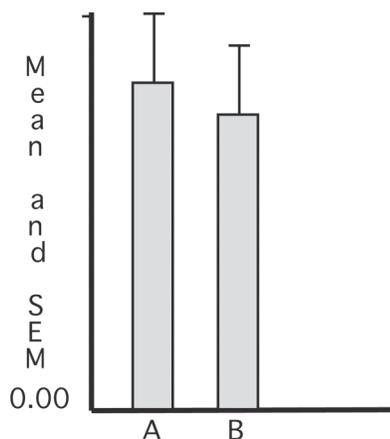


Fig. 2. The members of the *Tangerine Awkestra* in the staircase during a break in the recording session. (Photo © Neil Budzinski)

players are not sufficiently well designed to indicate whether they suspect that their auditors are either human or Artists.

Fig. 3. A comparison between *genuine music* from the Knitting Factory record label and the *nonmusic* of the *Tangerine Awkestra* by the Adapted Turing Test. Five sophisticated adult humans correctly identified the genuine music in five of eight trials and chose the *nyet-myuzhik* in the remaining three. The number \pm standard error of correct (column A) and incorrect (column B) responses by five human respondents for each trial is shown. The null hypothesis that auditors could not correctly distinguish between the recordings was not clearly disproved (Probability $p = 0.23$, chi-square paired test for independence, 7 degrees of freedom.) (© Dave Soldier)

3.20



Let us then posit a *weak definition* of genuine music as follows. While perhaps genuine music can be created by artists who don't know what they're doing (as with the *Tangerine Awkestra*), the weak definition requires that to be a member of the set {genuine music}, the creators at least possess the *intent* to produce it. That is, genuine music cannot be created by *zombies*.

Thus, by the weak definition, members of the set {genuine music} can be empirically identified by determining that the composer intended to produce the work. How can we determine someone else's intent? How do we know if the boss only tells us what he thinks we want to hear, when a lover is lying, if a birdling really means it when she *parrots* her teacher?

Amazingly, there are established areas of academic discipline that deal with zombie studies and other questions of importance. Theoreticians of consciousness often rely on a small number of improbable gedankenexperiments to illustrate their points, prominently including John Searle's "Chinese room" [3]. A man sits in a room receiving manuscripts in Chinese and translating them into English. However, he understands no Chinese himself and simply uses a dictionary and a set of instructions to assign to each Chinese character its corresponding English word. The instructions are so good that no observer can tell that the man does not understand what he is translating.

That is, the task requires no conscious intent, no interior consciousness, and the man could be a zombie.

By the weak definition, composer zombies analogous to translator zombies are prohibited from creating genuine music. A composer zombie would have no conscious intent to create music but would create it anyway. Obviously, composer zombies would pose a diabolical threat to the well-being of genuine music.

THE PEOPLE'S CHOICE "MUSIC"

The following case suggests that something that all too closely resembles genuine music can be created without the presence of interior consciousness.

Following a project of the New York artists Vitaly Komar and Alex Melamid, who had earlier surveyed the masses to design the most wanted and least wanted paintings [4], a survey was designed by the researchers to determine precisely what people "liked" and "hated" in music. The survey was administered to 500 Americans.

The questions, with the most frequent survey replies in parentheses, were:

1. Please indicate your three favorite musical instruments: _____. (guitar, piano, bass)
2. My most favorite of all musical instruments is: _____. (guitar)
3. My least favorite musical instrument is _____ and I also don't like _____. (accordion, bagpipe)
4. My favorite duration for a musical composition is: _____. (5 minutes)
5. I prefer listening to music at a volume most people consider: _____. (moderate to loud)
6. I most dislike listening to music at a volume that most people consider: _____. (very quiet/very loud)
7. I most prefer music played at a speed that is: _____. (medium tempo)
8. My favorite music tends to be performed by _____. (3 to 10 musicians)
9. When I listen to music, the primary response I usually seek is: _____. (to affect mood)
10. The response least important for me in listening to music is usually: _____. (as background)
11. The most important attribute for me in a composition is that it: _____. (moves the emotions)
12. My favorite song subject is about: _____. (a love story)
13. I most hate hearing songs about: _____. (holidays, cowboys)
14. I most like listening to music: _____. (at home)

15. I most hate listening to music: ____.
(as background for commercials)
16. I most like hearing singing by: ____ (a low man's voice)
17. I most like hearing singing by a female voice in what register: ____ (a low woman's voice)
18. I most hate hearing singing by: ____ (a children's choir)
19. My most favorite singer sings in a musical style best described as: ____ (rock, rhythm & blues)
20. My least favorite singer sings in a musical style best described as: ____ (opera, rap)

The results from this survey were fed to a locally written software program to generate two *knotmusic* works, the *Most Wanted Music* and the *Most Unwanted Music*.

The *Most Wanted Music* was a love story sung by low bluesy voices, with moderate volume and tempo, of 5 minutes in duration. The orchestra was chosen solely by the *vox populi* using plots of the preference levels of the instruments [5] (Fig. 4a).

The *Most Unwanted Music* featured a children's choir (Fig. 4b) singing holiday commercials; a high-pitched operatic soprano rapping about cowboys; extremely loud and soft volumes; and bagpipe, banjo, piccolo, church organ and tuba. It had a temporal duration of 20 minutes.

The classic performance of these two works was for a production of a VH1 television show, *Rock Candy*, at Shine, a dance club off Canal Street in New York City. Doug Stone brought in a camera crew who filmed the unsuspecting clubgoers dancing to disco until they became used to the cameras. Then, the DJ slipped in the *Most Wanted Music*. Although for all of the previous dances couples danced separately, they started to hold each other and nuzzle. When the song was finished, the audience broke into applause, something that hadn't occurred following any of the other songs the DJ played.

This was followed by a return to about 20 minutes of typical club dancing music, lulling the crowd into a sense of normalcy. Then, the DJ slipped in the *Most Unwanted Music*. About 5 seconds into the piece, the dancing stopped. Forty seconds after that, someone screamed to the DJ booth: "Turn it OFF! Turn it OFF!" Brilliantly conducted by Maestro Stone, who took no bow, and it plays on reruns.

Those who created the *People's Choice Music*, the masses, had no intent or un-

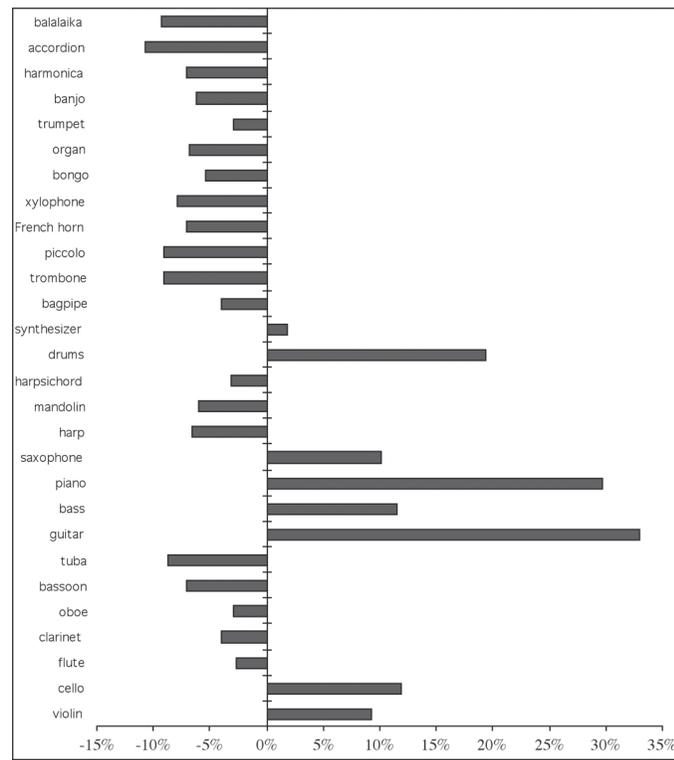


Fig. 4a. Complete response to the first inquiry of the survey of musical preferences and dislikes: "Please indicate your three favorite musical instruments." The average preference fraction was assigned a value of 0%. Therefore, the instruments used in the *Most Wanted Orchestra* were those with bars that fall to the right. (© Dave Soldier)

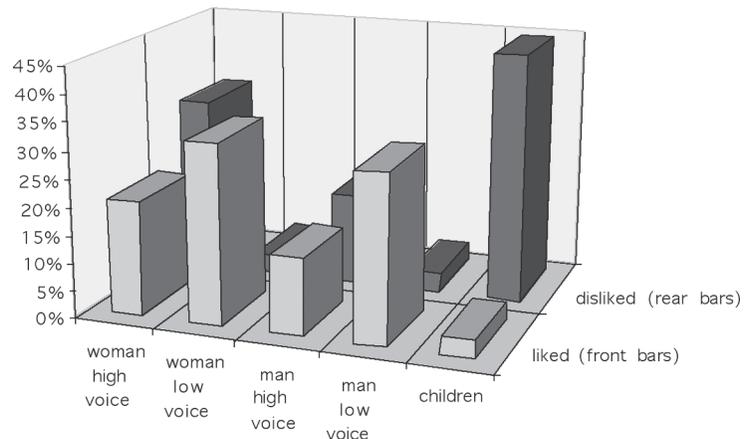


Fig. 4b. Complete responses to inquiries 16, 17 and 18: "I most like hearing singing by ____; I most like hearing singing by ____; I most hate hearing singing by ____." The light bars in the front row indicate the percentage for each vocal type that was liked; the dark bars in the rear row indicate the percentage for each disliked vocal type. (© Dave Soldier)

derstanding of what they were creating; they simply answered a series of poll questions. The attributes of these two works were decided without individual intent and are in no sense Art. No creative decision-making was involved. Yet it so cleverly imitates music that the listener could be fooled. This example proves that music can be created without intent, and to that extent, could be created by zom-

bies. Even the weak definition of genuine music cannot be defended, and genuine music lovers may be in serious trouble of being fooled by *nichtmusik* imitation.

NOTTALOTTAMUSES, THE DESPERATE DEFINITION

Still, this characterization of the *People's Choice Music* may be too glib or too clever

by half. It's true that the "music" was created without interior consciousness; but it was created by a *mass* of 500 humans making collective decisions. Certainly, with such a large and complicated intertwining of what is in effect a neural network, an apparent form of consciousness, an exterior type, of which none of the components are unaware, forms spontaneously. The end result is a product of the People's Will, the will of the masses (*volkmusik*) rather than the individual heroic will of the Artist. The work is composed by an *übermind* of human components.

Let us propose another definition, a logical, final and desperate last stand for the artistic integrity of genuine music. Let the *desperate definition* of genuine music be *volkmusik*, an emblem of the glory of our species.

The Thai Elephant Orchestra

Before Darwin, humans weren't animals, and animals couldn't create genuine music. After *The Origin of Species* and *The Descent of Man*, the rule was revised to the effect that humans are the only animals who can play music. Nonhuman animals are so similar to humans that we can use them to *understand* how humans can do such amazing things; they have the right brain parts and everything, which makes them OK to study. But those nonhuman animals somehow are cut off from actually getting down to making the real thing, genuine music.

One species that shares with humans the honor of jumbo-sized brains is the long-lived and highly social Asian elephant, *Elephas maximus* [6]. The impossibility of elephant music was recently tested by a group of Asian elephants in northern Thailand, at the Thai Elephant Conservation Center near Lampang. This is the first government-funded center established for the long-term future of the domesticated Asian elephant, but it also requires ongoing funds from tourism for its upkeep. Those who live with the elephants and understand them best, their mahouts, know that elephants like to listen to human music.

In order to establish an orchestra that could perform for Thai tourists, and thus raise ongoing support for the Conservation Center, the elephants were tested to determine if they could perform on specially designed musical instruments. Such instruments would need to be operable by the trunk, and be large and strong enough to stand up to very powerful animals and monsoons.

Altogether, the 12 members of the Thai Elephant Orchestra attempted over 20 instruments and mastered about half of them to the extent that they could improvise a broad variety of sounds [7]. A few were mass-produced Western instruments, particularly harmonicas and drums. The harmonicas were particularly well adapted, and the elephants sometimes blow them into their own ears. The most successful results to date have been attained with adapted versions of Eastern instruments, particularly reed instruments known as *khaens*, a tuned rattle known as an *angalung*, and the centerpiece of the orchestra, an instrument on which the elephants improvise melodies for minutes at a time: a Southeast Asian xylophonelike instrument known as the *renat*.

The Elephant's Xylophone

The Thai Elephant Orchestra primarily uses the "Lanna" Thai five-note scale, which the elephants are most used to hearing from the mahout's string band. In standard nomenclature, these notes are the fundamental, a minor third, a perfect fourth, a perfect fifth, a minor seventh and an octave. It is also common to use the minor third as a fundamental as a major mode. Although there was some variation from one string instrument to the next and between different groups, the scale was approximated for the renats using a "just intonation," or pitches expressed by simple ratios.

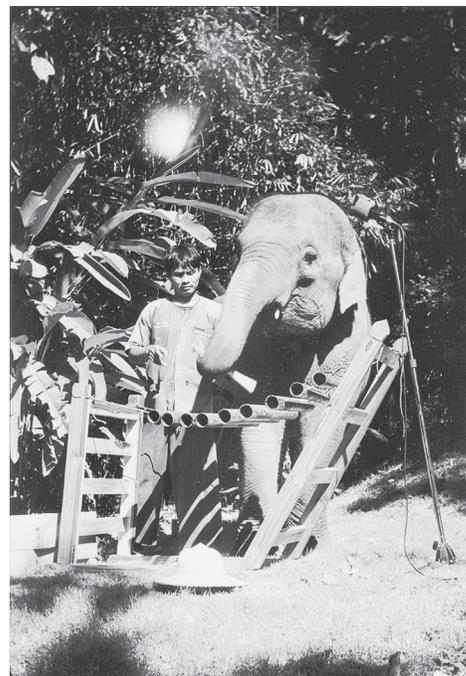
Traditional Thai renats are made of bamboo or rosewood and will not stand up to elephant use. To adapt the scale for the elephants performing in the forest, large steel tubes were cut and suspended.

To suspend the pipes, holes were cut at the nodes, the points at which the pipe's vibration amplitude are least. Finally, the pipes were attached to a strong wooden or metal frame with rope (Fig. 5), using knots or plastic spacers to prevent the pipes from clumping.

The elephants, like the human children in the Tangerine Awkestra, require little training to perform. Generally, a mahout demonstrates the instrument, and the elephant begins to play almost immediately. They experiment a bit on where to hit the instruments and determine, usually by the third afternoon session, how to make the instrument sound best. Their decisions are invariably the same as human taste, e.g. hitting the pipes where they make a ringing sound rather than a clink.

The musical works by the elephants have followed two general directions. In the first, a human cues the elephants when to enter and when to stop. The musical decisions between these cues are up to the individual elephant. To date, the elephants do not begin to play spontaneously, unless one of their friends is already playing—however, this may change as they continue to develop as performers. Often the elephant will continue long after a human asks it to stop, caus-

Fig. 5. The renat in action as played by Pratidah, then a 7-year-old. (Photo © Neil Budzinski).



ing consternation to the frantically gesticulating human, possibly delighting the elephant. One might imagine trying to tell a 10,000-pound animal to stop playing a drum when she doesn't want to.

The other style is compositional and was initiated by the mahouts. In this style, the mahouts teach the elephants to perform human tunes as a hoquet, with each elephant playing a single pitch of the scale. As of this writing, they have learned one such tune, a Thai nursery rhyme, "Chang Chang Chang," which consists of 44 notes. It is played on a large series of tuned angalungs.

It may be noted that not only does the use of nursery rhymes show up in several examples, but that the younger elephants (those under 12) tend to learn the more complex instruments more easily than the older elephants (those in their 30s and 40s).

Please decide for yourself how to define what the elephants are doing by visiting them in Lampang, Thailand, where they now perform daily concerts [8]. It's a great opportunity to spend time with elephants in the jungle and take lessons in elephant riding and mahoutship training.

Naught a Fit Not Out for Man nor Beast

Now that the elephant instruments exist, have these wily beasts figured out tricks to outfox humans? They sail through the Adapted Turing Test! To date, no one, including a professional music critic from the *New York Times* who will remain nameless, was able to identify the work as *nichtmusik*, although that critic ventured to suggest the works were performed by several chamber music groups that appear annually at Merkin Concert Hall near Lincoln Center. Indeed, when asked if the sounds were or weren't music, and if not informed of the identity of the performers, all questioned have replied, "Of course it's music."

WHY WORRY?

A reason for concern: Economic theory states that less expensive modes of production will eventually overtake more expensive, labor-intensive methods. Most multiple-part orchestral works require 2 days or more to record, and weeks of splices and edits before they can be released. The entire CD by the Tangerine Awkestra, which lasts for nearly an hour, was recorded in 2 hours and contains no edits, overdubs or splicing. The total studio costs were \$200 U.S. The cost of one *genuine* orchestral symphony by a real orchestra would go to produce 500 new CDs by the Tangerines. The current budget for a Metropolitan Opera production is \$4 million: the idea that 20,000 new CDs by the Tangerines could be recorded with that budget shows the historical inevitability of takeover by *naughtmusik*.

Clearly, a flood of recordings released by the Tangerine Awkestra would eradicate the entire orchestral repertoire. Perhaps more worrisome is that elephants truly play for peanuts, in massive quantities, and don't care for cash money.

In summary, there is something out there that looks, sounds, feels, smells like music, but isn't. It's made by animals, including juvenile humans, to resemble genuine music. These culprits can range from tiny songbirds through small human children to the largest land animals, elephants. We must hope that heroic music critics and others who understand this will rush to help, or one day they could fool us all.

Acknowledgments

This paper is dedicated to the late Rigglius the cat, a fine nocturnal pianist who developed a graceful style from extended techniques. The researchers thank fellow fifth columnists Linda Wilbrecht, Linzy Emery, Richard Lair and the staff of the Thai Elephant Conservation Center, Neil Budzinski, Rory Young, Vitaly Komar, Alex Melamid, Katie Down, Nina Mankin, Bernardo Palumbo, Lisa Haney, Ken Butler, Sara Tucker, Jane Bausman, Nic Collins and Patricia Bentson, the late Otto Luening, Katherine Luening, and Ayo Osinibi.

References

1. A.M. Turing, "Computing Machinery and Intelligence," *Mind* 59 (1950) pp. 433-460. This much-cited paper is currently available on-line at <<http://www.abelard.org/turpap/turpap.htm>>.
2. Examples of male mockingbird songs can be downloaded from the Cornell University Macaulay Library of Natural Sounds web page at <<http://birds.cornell.edu/LNS/>>.
3. J. Searle, "Minds, Brains, and Programs," *Behavioral and Brain Sciences* 3 (1980) pp. 417-424.
4. J. Wypijewski, ed., *Painting by Numbers: Komar and Melamid's Scientific Guide to Art* (New York: Farrar, Straus & Giroux, 1997). The most wanted and least wanted paintings by Komar and Melamid can be viewed at <<http://www.diacenter.org>>.
5. The piece was written by the respondents and executed by statistical analysis. The arrangements were by the research team. The public should be held responsible.
6. The best book on the domesticated Asian elephant is Richard Lair, *Gone Astray: The Care and Management of the Asian Elephant in Domesticity* (Bangkok, Thailand: Food and Agriculture Organization (FAO) of the United Nations, 1997). For copies, e-mail the FAO at: <fao-rap@field.fao.org>.
7. Many of the same elephants who play in the Thai Elephant Orchestra are also students at Komar's and Melamid's Elephant Art Academy, and their works can be viewed at <<http://www.elephantart.com>>. This site also has contact information for visits to the Thai Elephant Orchestra's daily concerts at the Thai Elephant Conservation Center in Lampang.
8. Wypijewski [4].

A Naughtmusik Discography

All of the following *naught-musical* phenomena can be ordered through <<http://www.mulatta.org>>. *Naught-musical* examples can also be downloaded at no cost from this site.

The People's Choice Music, Mulatta Records MUL 001 (1997).

Smut, featuring *Matarile*, Avant Records CD (1994).

The Tangerine Awkestra, *Aliens Took My Mom*, Mulatta Records CD MUL002 (2000).

The Thai Elephant Orchestra, Mulatta Records CD MUL004 (2001).

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