

Hello, name is Isaac Hawkins, and I recently returned from a trip to Bali Indonesia, Where I had the opportunity to perform, learn about, and listen to Gamelan Music.

Throughout this program we will delve into how gamelan instruments are built and tuned, taking into consideration 21st century technologies. [Music]

Gamelan is created by the pounding of heated bronze, into bars and gongs of varying sizes. The tuning of the ensemble, which is defined by the desires of the customer, will be set by a gangsa, one of the higher voices in the ensemble (Tenzer, 2011). This is an example of those pitches: [Music] Each individual instrument comes with a pair. One to be slightly higher in pitch than the other, when played together they will create a sound with waves. This is what a pair will sound like together: [Music] While this tuning is created at the gamelans inception, over time it will need to be tuned again.

For example, Gamelan Gita Semara, which translates to beautiful sound in English, was founded in 2010 by Dr. Brent Talbot at Gettysburg College. After 6 years, the bars and resonators were in need of repairs and tuning for the second time. A number of processes took place once in Bali. The bars were retuned, resonators made of bamboo were replaced, and resonators made of PVC pipe were repaired to correct the length (Tenzer, 2011).

There are a number of people who made this process possible. I Made Kartewan, a gamelan performer and tuner, was hired to retune the bars and replace resonators that had been brought with us from the United States. In addition, I Ketut Gede Asnawa, a world renowned composer and performer of gamelan hosted us while in Bali, led rehearsals for our performance at the Bali arts festival and facilitated the retuning of our instruments at his home.

As bronze bars age, they settle, and become more stable with their pitch. Thus newer bars will need to be retuned more often than those bars which are older.

The bars are tuned in various ways. Either a power grinder, or a blade is used to shave off minute amounts of bronze. The power grinder will be used on the underside of the bar, And the blade on the upper side of the bar, Making more subtle marks on the more visible surface. In order to retune the bars, a baseline using instruments from the gamelan must be set. In this clip you can hear the recording being played, and the bars being checked to match. [Music]

There are a number of ways in which the tuning must fit. The bars are tuned with their pair to ensure the wavering sound, they are tuned with different octaves to ensure that the ensemble as a whole is in tune, and they are tuned in relation to the other bars in the 4 bar scale, so that the instrument is in tune with itself (Gold, 2005). This is essential, because if the instrument is not tuned with itself, the music will not sound the same. For example, a reong on which we rehearsed, was out of tune, and it sounded like this: [Music] When in its larger context of the entire ensemble it was supposed to sound like this: [Music] In the end, tuning these instruments is no exact science, throughout the process I Made Kartewan returned to bars, Changing the tuning as he went.

When he had completed his work, I Made Kartewan, I Ketut Gede Asnawa, and I were able to talk about the effects that modern material has had on gamelan making.

For example, over the last ten years, plastic cordage is now being used to suspend the bars of the instruments, which replaces the traditional leather (Tenzer, 2011). Plastic is also used in the resonators in the form of PVC. Let's listen in and hear a discussion of the changes in sound caused by PVC with Kartewan, Asnawa, and Dr. Brent Talbot:

Kartewan: Yeah, I think it's a little bit different, because, uh, the pipe doesn't have like...

Asnawa: The reason it is more better, using the bamboo is because they are still, gentle, uh, what do you call it.

Talbot: It breathes a little.

Hawkins: Okay.

Talbot: So that's kind of the issue of putting shellac on the outside of it, is that it actually stops the breathing, so it's no longer porous.

Hawkins: Yeah

Asnawa: Bamboo better than PVC. But because of the weather in United States, because of the winter, it creates a crack...

In the case of Gamelan Gita Semara, As Asnawa described, our instruments are subjected to much more change in temperature, and humidity in central Pennsylvania, than they would be in Bali. This expansion and contraction, has worn away at the bamboo resonators and caused them to crack. For this reason, switching to PVC seemed like a viable option, but was ruled out because it would likely not fit the instrument casings. It was then considered to seal the bamboo resonators with shellac as we heard Dr. Talbot mention. The shellac will strengthen them and allow them to be more resistant to the effects of temperature and humidity change. However, this reduces how porous the bamboo is, making it more like PVC. The use of PVC and plastic cording shows how Gamelan has been affected by globalization. In addition, the effects of globalization have changed those who perform gamelan

and in what contexts it is performed. From religious ceremonies, and tourist-gearred performances in Bali, to Balinese groups touring around the world, and universities having their own ensembles. The ways in which gamelan is used are widely varied.

In today's world, gamelan is a commercial music, being consumed in multiple media forms. It is a genre in western music education, and it is performed in religious and commercial contexts in Bali (Gold, 2005). All of these contexts change the meaning of the music, so it is important to recognize that globalization, is changing not only the way in which gamelan is made, but also the way in which it is performed.

Thank you for tuning in to this program on the tuning and effects of Globalization on the building of Gamelan instruments, which was presented by Isaac Hawkins from the Sunderman Conservatory of Music at Gettysburg College.

*I affirm that I have upheld the highest principles of honesty and integrity in my academic work
and have not witnessed a violation of the honor code.*

Isaac Hawkins