

Trinity College

Trinity College Digital Repository

Senior Theses and Projects

Student Scholarship

Spring 2019

The History of the Steelpan, it's impact in Hartford and the significant evolution

Kimani Bishop

kimani.bishop@trincoll.edu

Follow this and additional works at: <https://digitalrepository.trincoll.edu/theses>



Part of the [Education Commons](#), and the [Music Commons](#)

Recommended Citation

Bishop, Kimani, "The History of the Steelpan, it's impact in Hartford and the significant evolution". Senior Theses, Trinity College, Hartford, CT 2019.

Trinity College Digital Repository, <https://digitalrepository.trincoll.edu/theses/795>

Trinity College
HARTFORD CONNECTICUT

TC

Trinity College Hartford, Connecticut

THE HISTORY OF THE STEELPAN, ITS IMPACT IN HARTFORD AND THE SIGNIFICANT EVOLUTION.

By: Kimani Bishop

A thesis submitted for the required accreditation of the Musical Arts
Degree.

Trinity College Hartford, Connecticut

Faculty of Music (General)

April 2019

Table of Contents

<u>INTRODUCTION</u>	6
<u>HISTORICAL OVERVIEW</u>	8
<u>1.1 Indigenous People</u>	8
<u>1.2 European Conquests</u>	9
<u>1.3 Early Forms of Cultural Resistance Through Music</u>	10
<u>1.4 Pioneer Stages of the Steelpan</u>	12
<u>1.5 The Birth of Calypso Music</u>	15
<u>1.6 The Making of the Steelpan</u>	17
<u>1.7 Biography of Harold Headley (Pannist)</u>	24
<u>1.8 Biography of Ellie Mannette (Pioneer)</u>	25
<u>THE HARTFORD STEEL SYMPHONY ORCHESTRA (HSSO)</u>	29
<u>2.1 Biography of Kelvin Griffith (Engineer)</u>	30
<u>2.2 The Birth of the Hartford Steel Symphony Orchestra</u>	35
<u>2.3 Kelvin Griffith's Explanation of the Steelpan Making Process</u>	38
<u>2.4 The Arrangements and Repertoire of the H.S.S.O</u>	40
<u>2.5 Kelvin Griffith's Overview of the Steelpan Making Process</u>	42

<u>2.6 Steelpan Styling Diagrams and the Steelband Ranges Charts</u>	49
 <u>STEELBANDS ARRIVAL IN NORTH AMERICAN SCHOOLS</u>	57
<u>3.1 Biography of Cliff Alexis (Steelpan Educator)</u>	61
<u>3.2 Biography of Liam Teague (Steelpan Educator)</u>	62
 <u>THE TRINIDAD ALL-STEEL PERCUSSION ORCHESTRA (T.A.S.P.O)</u>	63
 <u>BECOMING THE NATIONAL INSTRUMENT OF TRINIDAD AND TOBAGO</u>	67
 <u>PERCEIVED STIGMA OF CARIBBEAN IDENTITY</u>	69
 <u>WEST-INDIAN-AMERICAN'S PERCEPTION OF THE DEVELOPMENT</u> <u>OF THE STEELPAN</u>	71
 <u>CONCLUSION</u>	76
 <u>BIBLIOGRAPHY</u>	78

ACKNOWLEDGEMENTS:

This research paper would not have been possible without the support of the following persons. First and foremost, this paper would not have been completed without the wisdom and strength of the Almighty Jehovah God. Second, to Dr. Xiangming Chen, the Dean and Director of the Center for Urban and Global Studies (CUGS) at Trinity College for their generous financial support throughout my research process. Third, Mrs. Teresita Romeo for her assistance in helping me to acquire financial aid during my research. Fourth, the Rather Library at Trinity College, Hartford, Connecticut for the lending of recording equipment to conduct my interviews and storing footage including the punctual provision of all the materials requested. Fifth, Mr. Kelvin Griffith for his major contribution and his approval for hosting my research at his residence during the summer of 2018. In addition, the interviewees: Cheryl Griffith, Kyle Griffith, Kayla Thompson, Michael Edwards and Danyel Hudson. Also, other interviewees such as: Mr. Harold Headley, Davy Jagan and Curtis Greenidge for all of the information that they have shared in contribution to this research project. Along with my friends and family for their moral encouragement and support.

I would also like to take this opportunity to pay special tribute to my advisor: Professor Eric A. Galm for his patience and support throughout the research and the formulation of this thesis. Including his continued innovative contributions from the initial idea of the project to the completion of this research paper.

Your contributions and support will never be forgotten.

ABSTRACT:

The History of the Steelpan, its Impact in Hartford and the Significant Evolution.

The thesis focuses on the history and development of the national instrument of Trinidad and Tobago and its development for more than twenty-five decades. The rebellion of the African slaves that were forbidden to use their drums upon arrival to the Caribbean led to the invention of the steelpan through paint pans, aluminum tins, and zinc cans.

This research also involves individual interviews and information about the members of the Hartford Steel Symphony Orchestra (HSSO) and their contribution to the community. The HSSO is a well-profound musical orchestra located in East Hartford, Connecticut. The documentation of the production and engineering of the steelpan done by Mr. Kelvin Griffith including information about the HSSO rehearsal and live community/state performances during their festive season. Also interviews from persons who witnessed the violent battle of steelbands during the 'Golden Era' of the 1960s. Visual diagrams of the early stages of the steelpan leading up to the standard 'fourths and fifths' instrument.

This research also connects the migration of the steelpan from Trinidad and Tobago to the United States and the perceived annotation about the steelpan's national identity. With interviews conducted with Trinidadian-Americans and their views on the current position of the steelpan.

Key words: African Slaves, Steelpan, Steelband, Hartford Steel Symphony Orchestra (HSSO), Rhythm, Hartford

INTRODUCTION

Hartford was one of the cities where the Europeans first settled when they arrived in North America in 1600s (Battle 1994: 54,55). From as early as the nineteenth century, the city of Hartford has developed into a rich blend of multiple cultures, races and ethnicities. By the mid nineteenth century, the African American population contributed significantly in helping to form the city of Hartford. Approximately 61% of black American migrants were from southern states such as Georgia, Virginia, Florida and the Carolinas, and approximately 10% came from the West Indies (Battle 1994: 54,55). Today's Black community of Hartford represents a population of 54,338 or 40%, which is the largest West Indian community in an urban area located outside of New York. The Hispanic community, primarily comprised of Puerto Ricans, is estimated to be 44,137 or 32% in Hartford. The combination of both communities comprises about 70% of Hartford's population (Battle 1994:57). Hartford is now a city where the minorities are the majority. This significant number of West-Indians who migrated from the Caribbean to Hartford, have carried with them their rich, unique culture and traditional practices such as the annual West Indian Parade, West Indian creole restaurants, and musical arts programs that are part of the educational curriculums in local schools. Their culturally active offerings have significantly impacted the community in a collaborative way through musical ensembles such as the Hartford Steel Symphony Orchestra (HSSO). This is a musical organization that has continued to make a positive impact through the steelpan, the national instrument of Trinidad and Tobago, and soca music, a closely associated musical genre that drives the celebratory parades in Hartford. Throughout the course of

my undergraduate studies, I became increasingly interested in the West-Indian Diaspora and various practices that exist particularly in Hartford. Taking advantage of this opportunity, I developed a research project about the ensemble and its contributions to the Greater Hartford Community through support from a Student Initiated Research Grant and the Center for Urban and Global Studies at Trinity College. I obtained recording equipment and transportation assistance to frequently visit the instrument construction and rehearsal venue in East Hartford. During the period of June 2018 to August 2018, I conducted interviews with members of the orchestra about their lives prior to becoming members of the HSSO and how they perceived their contributions to the steelband. I also recorded and documented daily and dress rehearsals prior to scheduled performances. In addition, I worked closely with the orchestra's co-founder, steelpan maker, and tuner, Mr. Kelvin Griffith. Over the course of this project, I accumulated footage and information about the art of steelpan production, including scientific measurements about the depth of the tenor pan construction, tuning, and finishing, as well as the significant skills that are acquired along the way. In the following document, I intend to combine the information that I learned, and place it into a historical context, particularly in relation to technological developments of this percussive, idiophonic instrument. The story of the steel pan intertwines the presence of the U.S Navy in Port-of-Spain during the Second World War, violent conflicts between Trinidadian citizens and their authorities, internal conflicts within the steelbands, performance competition contexts, and the mythology of perceptions surrounding the tropical environment that encompasses this musical instrument. I then discuss the impact of the steelpan within educational institutions throughout North

America. The journey of the development of the steel pan ranges from the early pioneer stages of the concave “ping-pong” pan, to the expanded range of a pentatonic scale and later, towards chromaticism. Recent technological developments include a metal chroming process, the emergence of the mechanically engineered “G-pan,” and the electronically triggered Percussive Harmonic Instrument also known as the “PHI pan” invented by researchers at the University of the West Indies. I then explore a range of opinions regarding the evolution and cultural acceptance of these innovations and discussions on whether they should be accepted or perceived as threats to the steel pan-world.

HISTORICAL OVERVIEW

1.1 INDIGENOUS PEOPLE

Just off the coast of South America, in the Lesser Antilles of the Caribbean is the distinguished twin island nation of Trinidad and Tobago (T&T), a country that is historically rich with culture and natural resources as oil, gas and asphalt. In light of this fact, this country has made numerous and significant contributions to the world in many ways. The twin-islands have a diverse population of religion and ethnicities that predated the abolition of slavery in August of 1838. (Riggio 2008:31). When Christopher Columbus arrived on the shores of Trinidad in 1498, and on the island of Tobago in 1608, he met the Amerindians (Arawaks and Caribs) who were the original inhabitants of the island. Later, in 1688, the Spanish enslaved the original inhabitants of the island (Sheehy

1988:952). Under the rule of Spain, Trinidad's evolution as a colonial plantocracy was in an economic crisis. The initial inhabitants were almost extinct due to an epidemic of the smallpox disease in 1739. The outbreak of the smallpox disease and physical assaults against the Carib tribe contributed to the decline in the Arawak's population. As a result, the population declined from an estimated thirty-to-forty thousand in 1498 to only 649 survivors in 1777 (Brereton 1981:5-6). The main difference between the two tribes is that the island Caribs practiced cannibalism and they were always ready for combat, while the Arawaks were relatively peaceful people (Williams 1962:3). The Caribs were also one of the most dominant groups in the Caribbean, as history shows that their ancestral forefathers were Igneri. The Carib tribe would invade an island and claim it as their own, however, they would respect whatever tribe that they had found and would live in peaceful harmony, alongside the indigenous people.

1.2 EUROPEAN CONQUEST

Then in 1797, the British and the French government invaded Port of Spain forcing Jose Maria Chacon leader of the island and the French government to surrender the island to them. West Africans were brought to the islands by Spain as agricultural slaves from the 16th century to the 19th century (Blake 1995:24). The land was abundant with sugar cane, tobacco, citrus fruits, coffee, bananas and spices. Thomas Jefferson, a graduate student of the Wesleyan University in 1985 stated in his thesis that "Sugar Cane and cacao were identified as the principal export crops, followed by "coffee, rice, coconuts, bananas, and citrus fruits" (Jefferson 1985:14). The enslaved Africans were

forced into labor on coffee and rice plantations. Finally, in 1833, the British Empire declared the Slavery Abolition Act, the first act in the Americas. Granted declaration of the Abolition Act in 1834, the British then brought laborers in 1845 from North India and China as indentured workers to make up for the shortfall. “The emancipation of the slaves in the 1830s created a shortage of cheap, available labor. The solution to the situation was found in the importation of indentured laborers from India and China between 1845 and 1917” (Thomas 1985:12). The East Indian indentureship ended in 1917 and the Indians who settled on the island of Trinidad cohabitated with the African descendants. Since that time, there have been small amounts of immigration from countries such as Portugal, Madeira, the Azores, parts of Europe, the United States, Venezuela, and other West Indian islands (Jefferson, 1985:12). Today, Trinidad and Tobago represent a mixture of multiple races and multi-ethnic groups with 40%.8 African, 40.7 East Indian, 0.9% White, 0.5% Chinese, 16.3% Mixed and 0.8% of other cultures that have given birth to some of the traditional culinary dishes that have become emblematic of the heritage of the twin islands (Blake 1995, 26).

1.3 EARLY FORMS OF CULTURAL RESISTANCE THROUGH MUSIC

When Trinidad and Tobago were under the rule of the British Empire, prior to 1797, the African slaves began to revolt against the British and their troops. The enslaved Africans created a rebellious movement in secrecy because they were not permitted to communicate with each other. They understood that their lives would be at stake if they

were caught communicating with one another, so they found a medium to stay in touch in a very discrete and creative manner.

“The 1883 ban that outlawed ‘the beating of any drum, the blowing of any horn, or the use of any other noisy instrument’ didn’t discourage or deter the inventive Africans. Indeed, they became even more determined to maintain their religious and native customs. In some cases, drumming went ‘underground’. This was especially true for drumming used in religious practice and ritual. From the time that the slaves first arrived in Trinidad, their religious customs were held suspect by the European colonials. An earlier 1869 ordinance has gone so far as to cite the practice of any African religion as black magic. Anyone involved in such practice at that time would have been subject to flogging or imprisonment as punishment” (Smith 2012, 33).

By playing their drums in various rhythmic patterns, they were able to communicate in a way that they thought the British would have difficulty suspecting or even decoding. These rhythmic patterns would translate into codes and they alerted each other about their revolutionary plans, current situations and potential attacks from the British troops. John Chernoff visited the country of Ghana in the 1970s to learn more about African music. “African music is that African music is not set apart from its social and cultural context. Perhaps more than novelty or the strangeness of the sound, the different meaning of a music which is integrated into cultural activities presents difficulties to the Western listener and undermines his efforts to appreciate and understand African music” (Chernoff 1979:33). African music was not only for rituals, it was a way of life. Everything that happened in the village would be expressed through music. Each tribe would have different rhythmic pattern that would identify their community. “African music is a cultural activity which reveals a group of people organizing and involving themselves” (Chernoff 1979:36). “By squeezing the drum, you can produce tones ranging more than an octave.

I could never hear where the beats were or how the different parts fit together” (Chernoff 1979:5). African music refers to particular style of living and a person’s sensibility towards life. It is revealing cultural pattern, ethical modes and standard of judgement (Chernoff 1979:4). When the British troops discovered this medium of communication, they destroyed all of the drums. However, that did not stop the slaves from pursuing their rebellion. “Repressive acts by the colonial authorities such as the banning of the African drum and the attempts to stifle non-European cultural expressions, not only steeled the will of the practitioners of street culture, but also sent a message to the colonials that they would meet stiff resistance to their efforts to brutalize the masses for merely expressing themselves” (Selwyn Taradath). “When the 1883 ‘music bill’ went into effect, neighborhoods such as John John in Laventille and other areas on the outskirts of Port of Spain became strongholds of resistance against the ban. The people who lived in these communities refused to bend to the authorities or give up their religious practices. Even faced with retribution of possible criminal prosecution, they continued to beat their drums in defiance” (Smith 2012, 34). The French continued their annual Carnavalesque traditions in the streets.

1.4 PIONEER STAGES OF THE STEELPAN

During the festivities, the Africans found ways to rebel by attempting to participate in the parades, using bamboo stalks and striking them as loud as possible attempting to get the attention of others through a noise of awareness because they no longer had their

drums. The enslaved Africans would carve holes to make an open cavity in the bamboo to achieve a mixture of sounds. It all depended on the size, shape and how the bamboo is cut. Bamboo that is fully grown would not need to be altered because it can naturally produce the hollowed sound. The hollowed space from the bamboo causes an acoustic echo. "The bamboo instruments, cut from about one foot to five feet in length, also provided a full range of musical voices, from a low bass to high soprano" (Smith 2012, 34). The sound is amplified when it is struck by iron rods or similar materials, such as bamboo or wood. Bamboo stalks are abundant on the island, so Trinidadians developed ways of incorporating the bamboo into their protest, and it became part of their dancing and musical demonstrations, eventually becoming known as 'tamboo bamboo.' "The word 'tamboo' comes from the French word tambour which means 'drums'" (Tanner 2007, 3).

"Hill describes three of the basic bamboo instruments: the boom, foule, and the cutter. He also pointed out that they had roles similar to those of the three different sizes of drums common in Afro-Trinidadian drum ensembles. "The boom was a large piece of bamboo about five feet long and five inches in diameter, which was stamped on the ground (either on a hard- surfaced-road or on a stone in a yard) to provide the bass line. The foule consisted of two pieces of bamboo, twelve inches long and two or three inches thick, which were struck end to end and produced a sound higher in pitch than the boom. Finally, the cutter was a thin piece of bamboo (apparently of varying lengths), which was held over the shoulder and struck with a hardwood stick to create a high-pitched counter-rhythm of the rhythms of the foule and boom. The tamboo bamboo ensemble took the place of the African drums to provide rhythmic accompaniment of the Afro-Creole culture" (Stuempfle, 1995, 23-24).

The varying lengths and diameters of the bamboo tubes would produce different pitches, creating a rhythmic/melodic protest. They used anything they could find that would amplify the sound to draw attention to their anger, frustration and rebellion. "Players used bottles with spoons as beater in place of the traditional African iron bell. The glass bottle was usually a gin or whiskey flask; the thick glass of the bottle was sturdier and didn't break as easily as other kinds of bottles when played. They would tap the glass bottle with a metal spoon" (Smith 2012, 34). With their bamboo in hand, they gathered in large groups, marching the streets, striking the bamboo, chanting in unison, portraying their defiance and exasperation. Enslaved Africans would portray and enact cruel and indecent scenes of violence that re-enacted what the oppressors did to the slaves. This was enacted by a woman carrying a stuffed figure while militantly singing a Guinean song at the top of her voice. The European colonizers felt ashamed and embarrassed and in response, the elite and the colored middle class withdrew from the street celebration of the festivities. (Stuempfle 1995:20). The authorities were in such a rage that they stormed in and separated everyone participating in the protest marches and engaged in physical punishment and imprisoned them, leaving them behind bars without food especially since the decline of Trinidad's economy in 1790. On April 20 of that year, the King of Spain wrote a letter to the Governor of Trinidad, and promised that any European nation that would loan \$1 million dollars to the country, "it would be repaid from the value of the crops in their plantations" (Williams 1962:43).

In the year of 1881 to 1883, the people of Trinidad and Tobago continued to protest and rebel for their freedom through participation in the Carnival festivities, and their anger grew more intensely with each passing moment. Then in 1885 the people developed a dance to demonstrate their unity through the bamboo music with a form of stick fighting. This phenomenon transformed into “stick-battles” and performed the dance when the tamboo-bamboo was played in a rhythm and syncopation that was similar to the calypso rhythm. “Stick-battle” was an adaptation of traditional dance and fighting with wooden sticks, that began in West Africa. (Stuemple 1995:21).

1.5 THE BIRTH OF CALYPSO MUSIC

Calypso is a genre of music, developed in Trinidad that has roots in African songs, rhythms and timbres as well as European folk traditions. “Among the dance types were the *kalinda*, the *bel air* or *bele*, the *jhouba* and the *bamboula*, while the accompanying instruments included various types of skin drums and *chac-chacs* (gourd rattles)” (Stuempfle 1995:15). The people would violently beat the bamboo with increasing force causing the bamboo to tear or “bust” resulting in a less-resonant sound, and it would no longer be useful for the protest. The people would become aggravated when the bamboo broke, so they would substitute it with empty food cans, biscuit tins or any type of metal or aluminum that would create a loud sound. The violence increased as the protests grew in strength, and the citizens became enraged about their continual suppression from the authorities, and introduced opportunities to source larger, more efficient items and

materials that would cause a replication of amplified sounds, to help convey their anger and frustration. The people would search high and low, in garbage bins and throw litter in the streets. But as the authorities resisted and built a Military force against the people of Trinidad and Tobago, these rebellions continued to result in violent arrests, imprisonment, and horrific brutality. "In 1881 the Chief of Police led 150 policemen in an attempt to suppress the bands" (Stuempfle, 1995:22).

In 1882, the people of Trinidad and Tobago combined in numbers that were significant enough to parade the streets. Although there was violent protest, it was confined to individual locations. These gatherings would move from place to place and they grew in numbers. Within these larger demonstrations, they divided themselves into groups while chanting and using metal rods and iron spoons to strike the metal objects that were in their possession. This type of action increased the volume of their protest both collectively and rhythmically. The people would then invent and compose rhythms that would sync rhythmically with their chanting. Soon after, the protesters decided to switch to metal objects and discarded the bamboo stalks because the metal produced a louder sound, and the bamboo would easily split, since the instruments were played with increased physical pressure to correspond with the louder volume. They discovered that the metal seemed to be holding up very well during their parade and their protest. As early as 1911, the first-person accounts of these musical protests captured the creativity and innovation that emerged from these events. The people discovered that different

sizes of metal produced multiple pitches and tones. A first-person account by Alfred Mayers describes this in his own dialect:

“Well what happened is like this. Sometime you on the road and you hitting the bamboo on the ground all the while, it will pop. And then you catch yourself not doing anything. And if you see a rubbish can you wouldn’t leave it. That gone. Yes, because...in the morning, everybody start off with bamboo. But when the band comes back in, it have sometime ten, twelve rubbish can in the band, because the bamboo pop. And the guy want to do something. He want to play something. So whatever rubbish can, whatever it is-anything meta-like- he decided well he taking that...banging it in some sort of rhythm” (Stuempfle 1985:33).

1.6 THE MAKING OF THE STEELPAN

Then, the world changed in the 1930s. Germany, Italy and Japan went to war against their allies, Great Britain, Australia, Canada, New Zealand, the United States and the Soviet Union. Between 1939 and 1945, countries from all over the world were compelled to choose their allegiance. During that period of chaos and turmoil that had global and ripple effect, the United States Navy decided to establish a base off the coast of Porte de España (Port of Spain) in Trinidad. “World War 2 had begun, and Britain agreed to lease land in various parts of the West-Indies to the United States for bases. Thousands of American Navy, Marine, Army, Army Corps and civilian personnel poured into Trinidad” (Stuempfle 1985:45). The Marines fueled their warships and submarines with oil and gas on the bay of Port of Spain. They would store and carry their oil and fuel in large fifty-five-gallon metal drums. After the oil and the fuel were used and as the war ended, the sailors dumped the empty drums on the shore of Port of Spain and returned

to the United States, though a few Americans remained and settled on the island. In 1945 at the end of the war, the bay of Port of Spain was littered with empty oil barrels. "The Americans presence opened opportunity of employment in construction of bases, and roads. Employment with the Americans not only provided much needed cash but further strengthened working class consciousness" (Stuempfle 1995:45-46). However, the Americans wildlife became a problem for the people. The Americans would source musical entertainment along with the favors from women at their base. "Occasionally there were brawls between servicemen and local men, but there was also camaraderie in excessive drinking and gambling together began to displease the locals" (Stuempfle 1995:46).

When the locals discovered what the U.S troops had done to the bay area of Port of Spain, they took to the streets in anger and fury. This was now an additional reason that the locals used to resist the continued rule of the British Empire. As customary, the locals would march, and protest using all sorts of metal objects, including garbage bins and lids, biscuit drums, paint cans, brake drums, chamber pots with bottles and spoons. In a brief interview, Carleton "Zigilee" Constantine stated that: "The biscuit drum when it come in that's the first who invade the bamboo. When you hear that - more tone, easier to carry" (Dudley 2008:55). Under those circumstances, the authorities began to withdraw their stand against the people and allowed their movements and protests to continue. This began to open doors for the people of Trinidad and Tobago to form musical groups and compose various rhythmic chants, which developed into a mode of competition and

demonstration among each other. All people were allowed to participate, as long as they were holding any kind of metal objects and participating in the rhythmic movements. This form of protest quickly transformed into a street festival atmosphere, where each musical group represented a particular location or district of the island, and this developed into a very competitive practice among the participants. “Ping pongs ¹and other smaller pans were constructed from a variety of containers, including paint cans and garbage cans” (Dudley 1986: 275). A couple years following the conclusion of World War II, in 1947 to be exact, the members of the musical groups began to innovate. To increase the competitiveness, they began to explore ways of increasing the dimension of the music and the festivities. There were a few undocumented persons involved in this project but one of the founding practitioners, became very creative and insightful into the production of the music and its festivities. This process was described by Mr. Carleton “Zigilee” Constantine, one of the participants during this time, who observed that: “It start off with like, this guy have pan with two notes, you make one with three, and then a next one come with four and make your one into rubbish, and then one come with five and you know we keep on” (Dudley 2008:55). This exploration eventually produced various musical pitches and tones from the metal. When conceptualizing the physical structure of the instrument in the early twentieth century, a few Trinidadians came up with the idea to re-shape the surface area into a convex structure. The proposal to incorporate this development into their festivities was impressive to many and now they had to address

¹ Ping-pong is an eight-note steel drum made from either paint tins and/or zinc cans. This derived from pioneer invention the kettle drum which had four pitches invented by Ellie Mannette.

the task of making it practical by contributing it musically and most of all rhythmically into the musical groups. The main concern was how would one lengthen the surface of the metal without destroying or damaging the material. Through a relentless process of trial and error, these brilliant pioneers developed skills and tools to ensure their success. Studies have shown the sheer physics behind this process, and once the convex operation was successful, it resulted in a consequential musical instrument, which led to a musical instrument that helped to re-ignite the festivities on the island. People began to experiment with the convex shape, others began creating and designing shapes and impressions on the surface expanding the musical range to multiple pitches expanded the musical instrument's range, leading to a more pronounced musical expression, that generated significant interest and momentum, leading to its central incorporation into carnival parades. The people who participated in the festivities would compose songs and lyrics to collaborate with the convex drums. For the citizens, this was a step toward their own evolution and identity as individuals and as a group. The convex steel pan was a groundbreaking, evolutionary stepping-stone for the instrument, and with each passing year, people were excited to see and hear the new developments in the upcoming annual parade. Meanwhile, costumes were designed for the festivities, made from materials such as colorful lace, feathers and silk fabrics. Designed to portray freedom as a symbolic tradition, the costumes represented themes of the slave trade, African tribes and their culture that were brought to the Caribbean and became symbolic of the island heritage of Trinidad and Tobago.

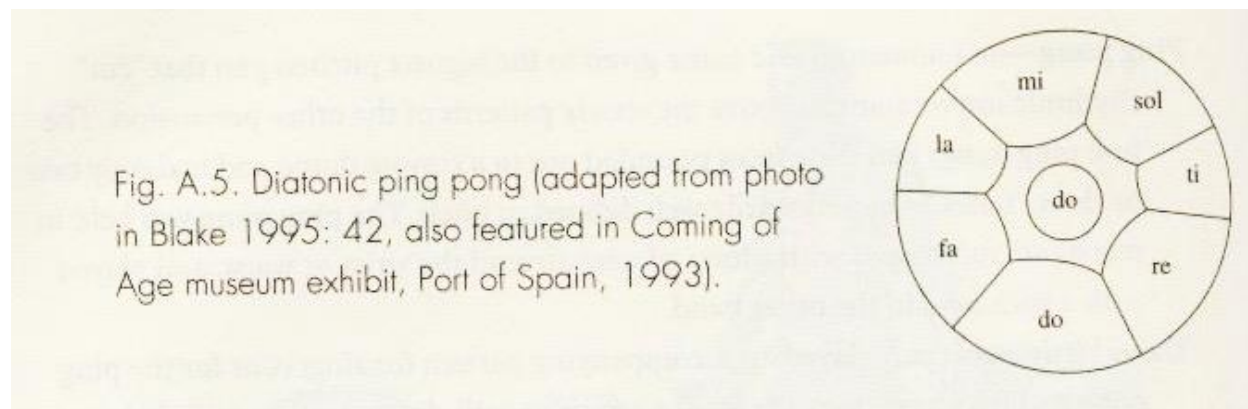


Figure 1: Diatonic ping pong instrument (Blake 2000:278).

In 1948, the festivities increasingly developed, and on the other hand, so did the music. Musicians such as Aldwyn Roberts, known popularly as “Lord Kitchener” (1922-2000), Slinger Francisco also known as “The Mighty Sparrow” (1935-Present) and many others, began composing lyrics for the convex steelpan and expanded upon the calypso genre. The lyrics are usually composed with topical stories describing slavery, police authorities, a well-known town/city, or about the perceived livelihood of children/youth of the twentieth century. The composers often composed their music with two fundamental chords in every key: the first chord (Tonic) and the Fifth chord (Dominant), generally written repetitively, and riddled with syncopated rhythms. Calypso music was the primary musical genre that was incorporated, adapted, and arranged for the steelpan. In the 1950s, the villages surrounding the city of Port of Spain were labeled as dangerous and violent places and were marginalized by island residents. The names of these areas are called Laventille, the Beetham, the Sea Lots, Morvant, and the Harp, were all initially villages, now neighborhoods within the constituency of Port-of-Spain.

Most of the steelband community was comprised of residents from those areas, which is where they would hold their rehearsals, and experiment with the steelpan. Some ideas included the reconceptualization of the layout of individual notes on the instrument to a chromatic and versatile playing surface, as well as transforming the surface of the drum from a convex to a concave product. In an attempt to develop the instrument, they began to stretch the surface inward instead of outward. This type of action sparked new ideas and broadened the evolution of the steelpan's end product, resulting in successful attempts to increase the number of pitches, enabling the instrument to have a larger musical range. As time went by, more notes were added, and new ideas ignited with each development. Due to the limited diameter of the surface, there was only enough space to place a certain quantity of notes. In addition to confined surface area, the material would transfer vibrations and trigger every pitch throughout the entire surface since they shared the same platform. In the early 1940s, the Dudup steelpan was invented. This instrument was made and tuned with only two pitched notes, "C" and "D," specifically designed to play the bass line. Once the bass section was established, the group members returned to the concept of developing a melodic steelpan. While most of the people involved in the engineering and the evolution of the steelpan were never documented, some, including Ellie Mannette, Winston Spree Simon, and Bertie Marshall, became known as the accredited steelpan pioneers of Trinidad and Tobago. They experienced many trial and error processes in their collective efforts, that eventually helped the steelpan's evolution to flourish. Perhaps one of the most significant changes was the switch from biscuit tins and kittle cans to the oil barrel, which occurred mainly between the 1950s and the mid-

1960s Today's standard steelpan is made from a fifty-five-gallon oil drum because the material was more durable, higher in quality and physically larger in diameter than recyclable tin cans, paint tins and aluminum containers. "From the late 1940s through the mid-1960s, as both the pan players and tuners refined their art, wave after wave of change swept over the steelband movement and revolutionized the state of pan music" (Tomas 1985:131). During an interview with Mr. Harold Headley, a steelpan performer and former member of the Trinidad Tripley during the 1960s, he stated that the first established layout of the steelpan was the A pan that was comprised of thirty-two musical notes.

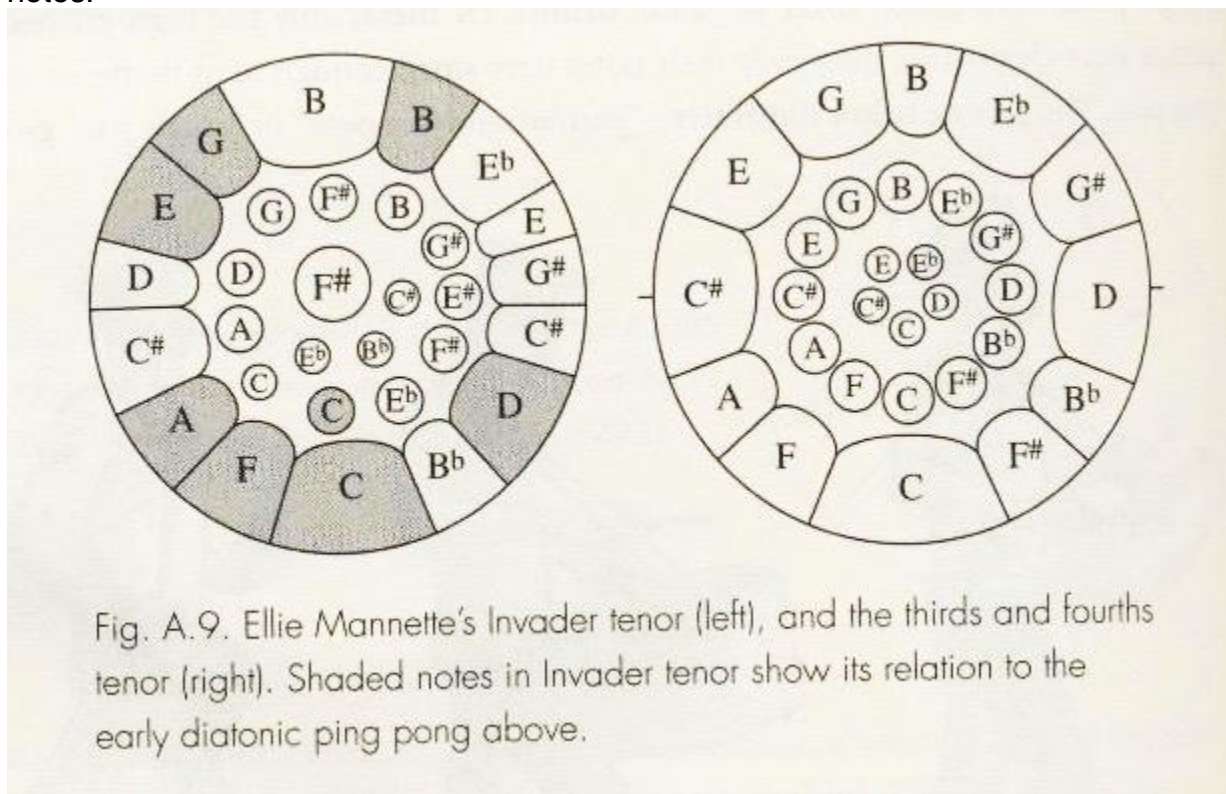


Figure 2: Ellie Mannette's Invention (Blake 2005: 280)

The A pan was commonly used by the Invaders Steel Orchestra. Mr. Headley also explained what he had witnessed while he was a member of Invaders. The Trinidad All-Steel Percussion Orchestra (TASPO) was formed by the leaders of the various steelbands in Trinidad in aid to evoke unity and peace among each other.

²"If yuh check out TASPO, most of the leaders, most of the players were from other bands. Tony Williams was from North Stars, Ellie Mannette was from Invaders, Grandville was from Tripley, ummm Metalson was from some band down south or whatever. Yuh see most of the badjohn band like Casablanca, Tokyo, Invaders, dey try to quiet the violence by getting the leaders together to be more productive. I really wasn't in dat but I knew about it. I did witness the one with Highlanders because I was playing behind them when they had the big fight with Highlanders and All-Stars, and a next band by the name of Fascinators (Janice Mervin) with all the bottle pelting...oh boy. But ammm, most of the violence was more between the supports yuh know, because the panmen didn't really use to look for fight. Most of the clash will take place because my band better dan yours, sounding better and so on yuh know". (Headley 2019, January 18, 10:12-13-49).

1.7 BIOGRAPHY OF HAROLD HEADLEY (PANNIST)

Mr. Headley stated that the most panmen would rarely venture into other panyards, due to concerns that it could trigger quarrels or physical assaults. Therefore, the sponsors were people who would visit the bands and initiate the fights mainly because of affection or interest of the same female and or ranking of talent among the bands. This marked the

² "If you check out the Trinidad All Steel Percussion Orchestra, most of the leaders, most of the players were from other bands. Tony Williams was North Stars, Ellie Mannette was from Invaders, Grandville was from Tripley, Metalson was from a band down south or whatever. You see most of the badjohn bands like Casablanca, Tokyo, Invaders, they try to quiet the violence by getting the leaders together to be more productive. I really wasn't in that, but I knew about it. I did witness the one with Highlanders because I was playing behind them when they had the big fight with Highlanders and All-Stars, and a next band by the name of Fascinators (Janice Mervin) with all the bottle pelting...oh boy. But most of the violence was more between the supports because the panmen didn't really use to look for fight. Most of the clash will take place because my better than yours, sounding better and so on."

beginning of territorial violence, where people were not allowed to enter neighborhoods without good reason, and these practices still exist on the island.



Figure 3: 'Harold Headley', UWI Faculty info, 26 February, 2019.

There were three kinds of violence apparent: Rival or inter-band violence, fierce brutality between the bands and the police authority and continued ferocity of cultural oppression by the colonizing power. (Blake 1985:86). "George Goddard, stalwart and early president of the Trinidad Steelband Association expressed this view: turf clashes preceded the development of steelband and that underprivileged youth would have fought among themselves or with the police in any event [1983:7]" (Blake 1985:87). The youths that were residents of these violent communities were socially and economically oppressed. They occupied the lowest social rank and therefore had the most frustration to vent.

1.8 BIOGRAPHY OF ELLIE MANNETTE (PIONEER)

As mentioned above, Ellie Mannette was recognized as one of the principal inventors of modern steelpan, which emerged as the national instrument of Trinidad and

Tobago. He was born in the village of San Souci in the northeastern part of Trinidad in 1927 and moved to Port of Spain in 1931, living first in the town of Saint James and later in Woodbrook. As a child growing up in the capital of Trinidad, Port of Spain, Mr. Mannette would often witness the parade bands striking oil drums that produced multiple pitches. Ethnomusicologist Shannon Dudley interviewed Mr. Mannette and he stated that “He first became intrigued with pan by watching Alexander’s Ragtime Band, and although he was too young to participate, he began playing on his own and experimenting with different metal containers in the late 1930s” (Dudley 2008:63). He then decided to dedicate himself to experimenting with steel pan development as a youth in 1945, during a tumultuous time in his life. Mannette began tuning steelpans while attending the Bishop Anstey High School in the early 1940s. In 1945, he had an altercation with one of his teachers and decided to drop out of school. He refused to notify his parents about the situation and devoted his spare time at a machine shop of his friend Mr. Robinson. One year had passed when Mannette’s parents found out about him quitting school and as a result he was thrown out of the machine shop by Mr. Robinson. When he realized that he had no other alternative, he decided to return to the panyard. Mannette is credited for sinking the face of the drum to a concave shape in contrast to a convex one, which he claims to have accomplished in 1941 during an interview. “Mannette also remembers being the first to put rubber tips on the pan sticks, although Neville Jules disputes this claim, asserting that Prince Batson of All Stars first came up with the idea” (Dudley 2008:64). In the 1960’s Mr. Mannette traveled to the United States to refurbish the Navy steelband and eventually

he shared his musical talent and steelpan music with a broader spectrum of American culture.

“The use of rubber was an innovation in timbre, softening the percussive “harshness” in the sound of pan-beating. And once rubber sticks had been introduced, the challenge was to improve the timbre or “tone” of the pans themselves. Compared to the confusion over who invented which style of pan first, there is less argument about whose pans sounded best in the 1940s and early 1950s. Timbral quality was not copied as easily as note placement and patterns, and Anthony Williams recalled that Mannette “had a unique way of tuning his pans, he produced very good sounds” (Dudley 2008:64-65).

Mannette’s legacy is based on both his exceptional tuning skills and his willingness to share them. Given his outstanding abilities and discoveries with regards to the tuning prowess and social connection, Mannette was recommended the opportunity to lead the “Trinidad All-Stars Percussion Orchestra” (TASPO), a steelband organization that was for by the government of Trinidad and Tobago in 1951 (Dudley 2008:67). It was during that period that he invented the twenty-eight notes, low Tenor pan and also the chroming of material. In the mid-1950s Mannette developed the chromatic tonal structure of the Tenor pan by attempting to physically perform the ascending notes left to right, then back to left and right again. He started out in South Carolina to work with the U.S Navy steelband, however, he soon became discouraged due to racism that he experienced. Then he perfected the making and tuning craft of the instrument and he was documented as the innovator of the spider-web steelpan. “Mr. Mannette was among the first to fashion a steel drum that had all the notes of the chromatic scale, so it could play any melody in any key. He strove to create that sound, and it captivated a lot of people” (Zraick 10/11/2018:1). “In 1967 he permanently, moved to New York to work with urban youth in music programs

and was sponsored by the Graceland Shipping Company to build steelpanns and teach its music to disadvantage youth” (Dudley 2008:67). He did not return to Trinidad until the year of 2000, when he received the Chaconia Medal from the government of Trinidad and Tobago, the country’s second highest state decoration. That same year, he was awarded an honorary doctorate from the University of the West Indies at St. Augustine (Zraick 10/11/2018:3). By the late 1980s, steelbands were part of music ensembles in dozens of high school and university music programs across the United States. He eventually migrated to the state of Virginia in the United States of America in 1992 where he established his own business. He became the major North American supplier of steelpan instruments and steelpan production. He also manufactured the steelband instruments for the music department at the University of Virginia and founded the University Tuning Project, where he was then offered the position of teaching steelpan tuning and performance for approximately twenty years (Dudley 2008:67). Soon after, other universities followed suit to incorporate steelbands in their music departments. Mr. Mannette stated that steelpan was not always seen as a symbol of innovation and resistance, because the music was often associated with rivalry, fighting and chaos during the 1940s and the 1950s. However, as his musical contributions began to appeal to the citizens of Trinidad and Tobago, the instrument became increasingly accepted. “In 1999, Mannette received the National Endowment of the Arts Prestigious Heritage Award in the United States. Including the government’s Chaconia Silver Medal, an honorary doctorate from the University of the West Indies and was deemed as the most sought-after tuner in the United States” (Dudley 2008:68). The annual steelpan competitions featured

recognition for the best musical band, but also the best overall balanced sound of the instruments. This inspired the tuners from the villages to further develop the sound quality of the instruments, which would also create a spotlight on the band that represents that tuner's village. Kelvin also explained the orchestral ranges of each section in the band during the golden era. "The soprano ping-pong what is called the Tenor Pan played the melody line, the Second Pan, the Guitar and the Cello played de harmony and the Bass was the boom, that played the melody of the music" (Griffith. 2018, July 10, 10:09-10:21).

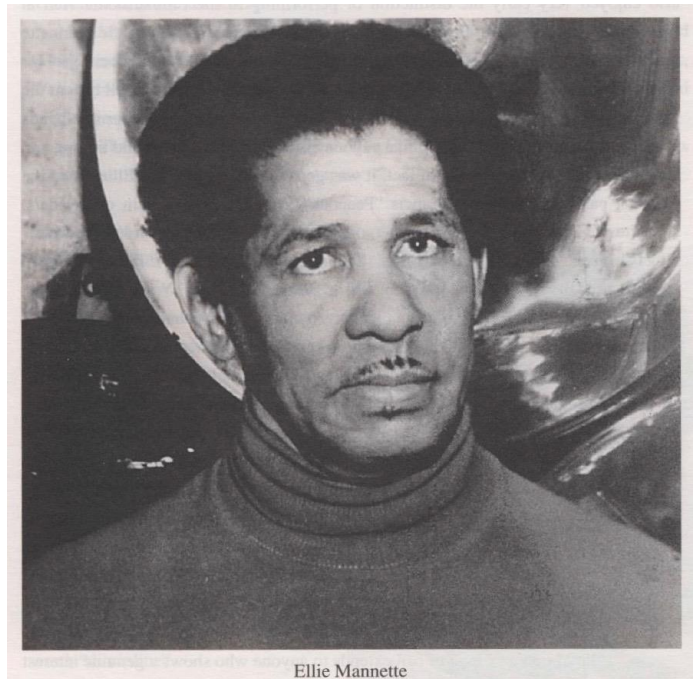


Figure 4: 'Ellie Mannette' (Blake 2005:165)

THE HARTFORD STEEL SYMPHONY ORCHESTRA

2.1 BIOGRAPHY OF KELVIN GRIFFITH (ENGINEER)

Beginning in June 2017, I attended rehearsals for the Hartford Steel Symphony Orchestra (HSSO). The group's co-founder, Kelvin Griffith, also a steelpan engineer, discussed his developmental experiences, and how the HSSO has been able to make a positive impact in the Greater Hartford community. Describing the cultural atmosphere during his youth, Kelvin recalls that when he attended the Osmond High School, "I uses tuh take meh school fees and give it to a friend that uses tuh save money to buy drugs. We get the drugs from a man who uses to tune pan. I had to be about fourteen to fifteen years old" (Griffith. 2018, July 10, 2:38-2:55). Kelvin and his friend grew up in the village of Diego Martin. Attending high school was not a significant priority at that time, and Kelvin found that he had a lot of free time during the day, where he found himself participating in a steelband in the vicinity without informing his parents.³⁴ Now that Kelvin was out of school and had a lot of free time during the day, he found himself participating in a steelband in the vicinity without informing his parents. At the age of seventeen, as mentioned previously, Kelvin's parents discovered that he was not attending school, and compelled him to find a job to help provide for his household. He landed a job as an assistant carpenter working under the authority of a respected elder in his community. At the end of his daily labor, Kelvin would attend the local steelband rehearsals established

⁴ "I used to take my school fees and give it to a friend that uses to save money to buy drugs. We would get the drugs from a man who used to tune pan. I had to be about fifteen years old" (Griffith 2018, July 10, 2:38-2:55).

by community members in his neighborhood. At the end of every rehearsal, Kelvin remained closely to the elders of the band and observed how they would tune (blend) the steel pans after rehearsals. Kelvin mentioned that Winston Wellington was a respected elder in the Diego Martin community, and a very talented steel pan maker and musician. Kelvin spoke of Mr. Wellington's Saturday morning music theory classes for community members of the band. Mr. Wellington taught Kelvin the basic foundations of music such as chord progressions, scales and rhythmic patterns that are used in steelband music. After theory classes, Kelvin would often sit in the company of Herman Collins who was also another steelpan maker. Mr. Collins taught Kelvin how to construct the instrument and guided him with particular techniques such as the "grooving" and the "shaping" of the notes. Kelvin grew up in a time when the steelpan orchestras (bands) were often involved or associated with violent disputes and the bands would fight against each other mainly because of rank or superior positions for the competition. They felt that this was the best way in gaining fame, and respect through the projection of intimidation. There would be situations when a minor dispute would occur causing chaos and fighting among the members. "In dem days yuh had to hide to play pan because yuh doh want yuh parents to find out you "liming" with bad johns" (Griffith. 2018, July 10).⁵ "Liming" is a terminology used by the locals to describe a social gathering or bonding with peers, to pass time idly with friends.

⁵ "In those days you had to hide to play pan because you don't want your parents to find out you liming with bad johns"

Kelvin grew up in the period that was considered the steelpan's golden era. This was a time where the pioneer pans such as the "Dudup", "Ping-Pong", "Piano Pan", "lime", "Tune Boom", "Kittle Boom", transitioned into different ranges such as the "Alto Pan", "Guitar Pan", "Cuatro Pan", "Cello Pan", "Bass Pan", "Second Pan", and "Double Second Pan". The Dudup was tuned with two-note pitches C and D that would be an accompaniment to call and response singing.

"Ping-Pong- an onomatopoetic name given to the highest pitched pan that "cut" rhythmic improvisations above the steady patterns of the other percussion. The first ping pongs had their faces pounded out in a convex dome and had only two or three notes, not necessarily well defined in pitch. The ping pong was held in one hand, sometimes with a loop of wire around the wrist or waist and played with a stick held in the other hand. The Kittle Boom also known as the Tenor Kittle pan is played an accompanying pattern of singers or the ping pong and may have been the first to acquire a well-defined pattern of pitches. Like the ping pong, it was convex and suspended by a wire around the wrist or shoulder. Some played with two like a side drum, and others played with one. Several contemporary observers sang for me the following tenor kittle pattern, with individual variations. The Tune Boom- named after its bamboo counterpart, this was a low-pitched pan made from a biscuit drum. It was also called by various versions of the name "kittle" (e.g., bass kittle, kittle boom), which was the word Trinidadians used for the conventional bass drum played in brass bands. The boom was held by a neck strap and played either with the bare hand (which made it a cuff boom), or with sticks, sometimes striking the side as well as the face" (Dudley 2008:277).



Figure 5: Early evolution of pans (Blake 2005:278).

He then founded his own minor steelband called “Rising Sun” on Bourne’s Road, Saint James, Trinidad. When Kelvin was only fifteen years old, he began to play the triple cellos. He was a member of the North Stars Steel Orchestra in his village. “I traveled all over d world with North Stars” (Griffith. 2018, July 10, 18:53-18:56). The music began to seek attention globally and that opened many opportunities to travel to other countries such as the United States, Europe and Middle Eastern countries. Kelvin saw this as opportunity to help out financially at home. “I was young, but my parents didn’t mind because ah was making good foreign money” (Griffith. 2018, July 10, 33:23-33:27). Kelvin’s passion grew when he stumbled upon steelpan tuning, making, and crafting at the North Stars panyard. With his limited knowledge of pan making, he spent a lot of his time with the tuners in an attempt to gain their social acceptance so that he could learn more and have a better understanding how to make of the instruments. Kelvin would spend hours each day, observing the techniques and methods that the pan makers used to finish the instrument. He worked closely with a steelpan maker from the “Them

Fortunates” steelband. In the beginning of his training, Kelvin was given the opportunity in tuning small pans that were made as toys for kids until he developed the necessary skills that were needed for tuning of the fifty-gallon barrels. After a period of three months, Kelvin had developed the skills needed for the tuning of the larger pans. It was at that moment, Kelvin realized that he had a talent and desire for steelpan craftsmanship, and he continued to work closely with the steelpan tuners in the community for guidance in his craft. He set aside hours of his day to work with a steelpan maker by the name of Toni from the North Stars steelband, in order to perfect his craft. Kelvin began to appreciate the sound and the quality of tuning the lower range steel pans (background pans) because the notes were larger in size than the higher pitched instruments, and he continued to work on perfecting his craft. Kelvin was then introduced to a steel pan tuner known as Collin from the “Sun Valley” steelband in Diego Martin. They became acquainted and Mr. Collin shared a few of his specialized tuning techniques with Kelvin. Soon after this experience, Kelvin made a life changing decision to migrate to the United States⁶ when he received a tourist visa from the Embassy of the United States as a participant in a North Star orchestra tour to Boston.

⁶ “Some guys take me to a party, and you seeing a guy playing a bass guitar and blowing a trumpet...and I say no. I can’t compete with that. And I seeing one playing the piano and blowing a trumpet. And I saying, I can’t compete with that...the best thing I could do is open a band”



Figure 6: Kelvin in his studio. Photo by Kimani Bishop 2019.

In 1970, Kelvin arrived in Boston where he stayed with a close relative for four years. Kelvin attempted to assemble his own steelpan orchestra in Boston but due to insufficient funds, his dream would have to wait. He also observed that he perceived a higher quality of talent in America in comparison to Trinidad and Tobago. “Some guys take me to a party, and yuh seeing a guy playing a bass guitar and blowing a trumpet...and I say no. I can’t compete with that. And I seeing one playing the piano and blowing a trumpet. An I saying, I can’t compete with that...the best thing I could do is open a band” (Griffith. 2018, July 10, 35:12-35:30). So, Kelvin and his brother decided to travel to New York to visit a steelpan pioneer residing in the United States mentioned previously, Mr. Ellie Mannette. Kelvin sought advice from Mr. Mannette about his experiences in the steelpan business and the steps that Mannette had taken to achieve his success in the United States. After a couple of months, Kelvin was able to establish his own orchestra called the “Boston Silver stars in 1972 for approximately sixteen years, however, the

shared leadership of the orchestra and other members of the band did not help to develop a structure that would ensure the band's continuation. After constant disagreements between the members, Kelvin decided to leave the orchestra and move to Connecticut. He settled in East Hartford, where he met his current wife Cheryl, also, from Trinidad, who had a deep passion for the steelpan and soca music. "The term "soca" is commonly said to derive from "soul calypso" suggesting a blend of African American and Trinidadian music" (Dudley 2004:87).

2.2 THE BIRTH OF THE HARTFORD STEEL SYMPHONY ORCHESTRA

Both Kelvin and Cheryl decided to start their own steel orchestra and in 1988, launched the "Hartford Steel Symphony Orchestra". The band initially had a committed group of eight people. The membership included other West-Indian friends, such as Curtis Greenidge and Debbie Sargent who also migrated to Connecticut. Curtis is the nephew of the well renowned Robert Greenidge, a steelpan pioneer and arranger who was prolific in the 1960s. Curtis followed in the footsteps of his uncle Robert, and pursued steelpan arranging as one of his professional careers. Today, Curtis is a proficient, professional Double Second, steel pan performer, and an accomplished steel pan arranger. He is also the leader and the arranger of the "De4awhee&company", a smaller steel ensemble also located in Hartford. Debbie Sargent was also born and raised in the Diego Martin village of Trinidad and Tobago, and she migrated to the United States in 1985. After a few years, Debbie got married and started a family of her own. She connected with Mrs. Griffith and

they collaborated for the sake of the HSSO. Mrs. Sargent has been their steel pan music arranger since the band was established in 1988. Soon after, Kelvin and Cheryl married and started a family of their own. As their children grew, they also contributed significantly to the orchestra. As Kelvin felt the need to provide for his growing family and was concerned about long-term stability, it was at that moment, Kelvin decided to establish his own pan making business. With the acquired skills that he learned when he lived in Trinidad, he applied all of his knowledge to start his business.

“I asked the landlord if I could make noise in the yard and he say yeah and the first thing I do is make cellos. I play cellos with North Star so I suppose to know how it sound. So I get it there and it sounding nice, nice. Then I fix second pan and it sound good and the last thing I ⁷try to do is fix tenor. Pan is something you does get hook on. If you tune and it come nicely, you does want to see how the next product come out. Every time you do a pan it should do better than the one before. And you have to try and get it neat, to come with the guys in Trinidad. How they does get it so neat and so smooth I don’t know. But now we kinda getting it that way because is metal you forming and if you rough the metal up it will come out rough. So you have to take you time” (Griffith. 2018, July 10, 44:18-45:25).

Another hurdle that affected Kelvin’s business was the North American four seasons. During the months of June to August is the summer solstice, considered as the “peak” season for the steelpan industry in North America. Then when the autumnal equinox begins and the temperature changes to a colder climate, it interferes with the labor production. This also includes the winter solstice and the vernal equinox, also known

⁷ “I asked the landlord if I could make noise in the yard and he said yes. And the first thing I did is made cellos. I played cellos with North Star so I supposed to know how it sound. So, I got it there and it sounds nice. Then I fixed second pan and it sound good and the last thing I try to do is fix the tenor pan. Pan is something that one gets addicted to. If you tune it and the end product is great, then one goes further to see how the next product come out. Every time you do a pan it should do better than the one before. And you have to try and get it neat, to come with the guys in Trinidad. How they do get it so neat and so smooth I don’t know. But now we kind of getting it that way because is metal you are forming and if you rough the metal up it will come out rough. So, you have to take you time”

as the spring season. These seasons affect the material of the drums (tuning is very difficult because the metal is not as responsive during the warmer seasons) and it is increasing challenging with the burning of the drums.

“Yuh see in America yuh could only tune certain time. Yuh only have June, July, August, as September after Labor Day it start to get back cold. I have friends in Chicago go down Trinidad to tune. Because they could only tune this period. In the winter they cyah tune. So, I now trying to dig out a spot in the basement and trying to insulate it so yuh could spend the time in there. I have a heater blower, so I could make there and tune there” (Griffith 2018, July 10, 17:10-17:55).⁸

2.3 KELVIN GRIFFITH’S EXPLANATION OF THE STEELPAN MAKING PROCESS

Kelvin also learned about the gauges that are recommended when choosing drums to begin the making process. “The thickness of the steel in top and bottom of the drum is usually 1.2 milliliters (18 gauge). The side of the drum, called ‘the skirt,’ is usually either 1.2 milliliters (18 gauge) or 1.0 milliliters (20 gauge) thick” (Blake 2005:101). However, according to Kelvin, this is decided by the makers discretion, skill and experience. He also achieved certification in Mechanics while learning to tune pans in Trinidad. Kelvin was an employee at ‘Henry Pain and Reynolds Mechanics Shop’ in Trinidad during the 1960s where he skillfully adapted the art of welding. He knew it was necessary for him because in the steelpan business, the pan stand is mandatory. Including the rupture or tear of the instrument during the making or tuning process, the craftsman should be able to solve the issue by welding the material back together. “I does

⁸ “In America you can only tune a certain time. You only have June, July, August, as September after Labor Day it starts to get back cold. I have friends in Chicago go down to Trinidad to tune. Because they could only tune this period. In the winter they can’t. So, now I trying to dig out a spot in the basement and trying to insulate it, so you could spend the time in there. I have a heater blower, so I could make there and tune there”.

weld from the bottom of the drum and when it squeeze through I does grind it from on top” (Griffith 2018, July 10, 19:27-19:38)⁹. Winston Welling was a pioneer tuner from the 1960s and Kelvin would often be in the company of Winston, especially while he was tuning pans for the North Star steel orchestra. It was in those times that Kelvin gained some of his pan making knowledge. Kelvin confessed that he developed his tuning abilities from playing the triple cello pans with the North Star steel orchestra. He explained that every tuner must have their own sense or idea that contributes to their work and the sound of the instrument. As a triple cello performer with that group, Kelvin understood the quality sound of the instrument and when the instrument begins to lose its tone, he would take it upon himself to adjust the instrument and create his tone or in other words, what he thinks the quality should be. After attending a few rehearsals on his cello pan, Kelvin knew he needed to develop and expand his skills, and for the first time created his very own triple cello. Following this accomplishment, he continued along the path of making and tuning triple cellos until he found the courage in an attempt to make set of six bass steel pans. Kelvin shared his first ‘hall of fame’ experience during the Labor Day festivities in New York, 1999. “When Ellie Mannette hear meh pans he compliment me and dyes how other people hear about me as a tuner¹⁰” (Griffith, 2018 July 10, 30:44-30:58). It was there and then, Ellie Mannette offered to assist Kelvin and reveal to him some of his tuning techniques. They both made arrangements for Mr. Mannette to visit Kelvin’s tuning shop in Boston for one week.

“He give meh a lil pointers on the second pan. He say yuh making the second pan too cone, doh sink and it would never be the side. No mind how you side this side,

⁹ “I do weld from the bottom of the drum and when it squeezes through, I do grind it from on top”.

¹⁰ “When Ellie Mannette heard my pans, he complimented me and that is how other persons heard about me as tuner”.

it would never reach where it suppose to go. The more yuh throw it back is the wider it will go. He is explaining meh this and explaining meh dat. And that is the only person I know to come and show me some pointers¹¹” (Griffith, July 2018 10, 31:98-32:24).

He mentioned that Mr. Mannette did not sink any of the drums as a demonstration, however, he grooved and tuned a pair of Double Seconds while explaining his style and techniques. Kelvin spoke of a tuner by the name of Ancil, whose work was very professional and near to perfection, compliments to his hand-crafted tools that was forged over the years. During Kelvin’s pioneer days of the Hartford Steel Symphony Orchestra, he landed a job as an automobile mechanic, working nine to five, where he then mortgaged his house and began to accumulate funds to establish a steelband. Although he was still a member of the Silver Star steelband in Boston, he would often embark on frequent trips to Hartford on weeknights after his job to help initiate the orchestra then back to Boston. However, that soon ended after an incident accrued when one evening on his way to Hartford, Kelvin fell asleep at the wheel and almost drove off the highway. He then decided to give up the steelband in Boston and move to Hartford where he could find a job, settle down and devote more of his time to the H.S.S.O project. Aside from his pan making and tuning abilities, Kelvin was also gifted with arranging for the steelband.

“I does use the upper part of the pan. You see half? Well I like up, the musicians like down. Dem does use the C, F G and D. I use E, C#, Eb, A. I like dem keys because yuh have a lot of sharps and flats. But down there yuh ain’t have no sharps and flats. Learn the melody. Somebody could tell me say am Kelvin... we have a wedding gig and dey want ‘I did it my way’. So, ah say to the person, get it on a cd for me and they will copy it on a cd and I’ll put it in my car. When I going to work, I singing it, when I coming home I singing it. By the time I reach home, I done know it on the

¹¹ “He gave me a few pointers on the second pan. He said you making the second pan too cone. Don’t sink and it will never be uneven. No matter how much you sink one side it would never reach where it supposed to go. The more you throw it back, the wider it will go. He explained this and explained that. And that is the only person that I know came and showed me pointers”.

Tenor and when I learn it on the Tenor because now I could sing it and find the notes. Then I learn it there and den add my chords. I ain't using nothing from Frank Sinatra because dyes he music. I have to have my own and dyes how I really does arrange my own music" (Griffith, 2018 10, 39:23-40:03).¹²

2.4 THE ARRANGEMENTS AND REPERTOIRE OF THE H.S.S.O

The H.S.S.O have arranged over thirteen records of music of different genres and have adapted them to their repertoire such as

1. "Feels So Good"
2. "Some Enchanted Evening"
3. "Tonight" – West Side Story
4. "Arlinda"
5. "Till"
6. "Never Could Say Goodbye"
7. "Dingolay"
8. "Feeling Hot, Hot, Hot"
9. "Who Let the Dogs Out"
10. "Mission Impossible Theme"
11. "Black Man Feeling to Party"
12. "Trini to de Bone"
13. "Dollar Wine"
14. "Bad Mama Jama"
15. "I Did It My Way"
16. "The Greatest Love of All:
17. "Bin Laden"
18. "No Woman, No Cry"
19. "In the Mood"

¹² "I does use the upper parts of the pan. You see the top half? Well I like to use the up part and the musicians like down. They do use C, F, G and D. I use E, C sharp, E flat, A. I like to use those keys you have a lot of sharps and flats. I learn the melody. Somebody could say to me Kelvin...we have a gig for a wedding, and they want 'I Did It My Way'. So, I said to the person, put it on a cd for me and they will copy it on a cd, and I will put it in my car. When I going to work, I am singing it When I am on my way home, I am singing it. By the tie I reach home, I already know it on the Tenor. Then I can sing it and find it on the Tenor pan. Then I learn it there and then add my chords. I am not using nothing from Frank Sinatra because that is his music. I have to have my own and tat how I really does arrange my own music".

Kelvin arranged these songs by himself before Debbie Sargent, a Trinidadian arranger joined the orchestra in 2008. Kelvin worked alongside Debbie, selecting and arranging the music, while Debbie would include musical components such as motifs, modulations, key changes and improvisations. What made H.S.S.O successful early in their career was the fact that they took requests from their customers and arranged the requested music for the entire band in a matter of days before the performances. H.S.S.O has performed at events such as: boat cruises, weddings, parades, festivals, including venues such as: Trinity College, the University of Connecticut, Wesley University, New London College, University of Massachusetts, The Mystic Aquarium in New London, and many other various landmarks in the New England region. Kelvin admitted to the stigma about panmen and their lack of commitment to their companions. He confessed through his own experiences that it was hard to stay faithful and spend quality time with his companion because of his solemn dedication to the steelband.

For more than thirty years, Kelvin sufficiently provided for his family through his pan making business, and he has emerged as, a well-known, professional pan maker, tuner and arranger. He explained in detail several of the required steps to ensure the successful completion of the steelpan making process.



Figure 7: Frontline members of the HSSO. Photo by Kimani Bishop.

2.5 KELVIN GRIFFITH'S OVERVIEW OF THE STEELPAN MAKING PROCESS

According to Kelvin, the steelpan making process follows several important steps. Once you obtain an oil drum, the first thing to do is to puncture the side or the “skirt” of the drum shell by using a large chisel. This is necessary because during the sinking process, compacted air inside of the drum needs to escape. Next, the “sinking” process begins, which is done with a short-handle six to eight-pound to ten sledge-hammer. This stretches and shapes the surface of the drum into a bowl-like, concave shape. The depth of the sinking often varies depending upon the instrument’s range within the orchestra. Following the sinking process, lines and circles are drawn on the surface with a pencil, a fine point marker or even chalk, to provide a guideline that leads into the next step, called the “countersinking”. The lines are calculations determined by a metric ruler from the rim of the drum to guide the area and sections of note and pitch placement on the surface.

Kelvin learned about these measurements of the width and length, after observing the work of the pan makers at the North Stars steelband and he then made some additional adjustments of his own. He created his own templates to outline the correct shape and size of the inner notes with hard plastic pieces, called “drafting.” Then, the “countersinking” process begins, which uses a smaller and lighter hammer. It separates and shapes the notes and allows the maker to smoothen the surface after the sinking process. “Countersinking” is a very important process because it disconnects the vibration of notes from each other. Technologically, this method was a breakthrough, since it enabled each note to resonate individually, without triggering all of the notes and pitches on the same surface. It is a challenging operation; however, it is necessary for the tuning procedure.



Figure 8: The Countersinking Process. Photo by Kimani Bishop 2019.

The next step is commonly known as the “grooving.” This is done with a nail that has a flat, smooth diameter and a hammer that indents the lines after the drafting. It is a key element that helps to separate each note on the same surface. The final step in the making is known as the ‘setting’ or the ‘finishing step’. This is the procedure where the maker creates an even balance on the surface after the grooving process. Now that the making process is complete, the pan then goes on to the tuning operation but first the drum must be heated, also known as the ‘burning’ or ‘tempering’. The pan is heated by fire until the entire material is fully tempered up to 350 degrees Fahrenheit (Morin, 1988).



Figure 9: Drafting of the Tenor Bass. Photo by Kimani Bishop 2019.

It reflects a metallic blue hue in color. Then it is swiftly quenched by water. The quenching causes the metal to regain a firm surface. The burning is meant to soften the metal, most importantly the surface where the notes are placed, in order of preparation for the tuning. The next step is the tuning process, which begins with the use of a small hammer and an electronic strobe.



Figure 10: Tuning Hammers. Photo by Kimani Bishop 2019.

The tuner must work within the playing surface and at the back of the notes between the shell and the surface. Then the tuner develops a rhythmic pattern that brings together his experiences and understanding, and he shapes and hits the surface, searching for the pitches (or the fundamentals) on the surface of each note. Once that fundamental is achieved, then multiple pitches, also known as overtones, emerge from that singular note. The electronic strobe is set to tune at the standard pitch of A440 Hertz. Upon completion of the first tuning, the maker drills holes in the sides of the shell in order to hang the instrument for performance, and then the pan is painted or in most cases, it is chromed.



Figure 11: Electronic Digital Strobe. Photo by Kimani Bishop 2019.

The standard layout of the instrument is called the cycle of fourths and fifths. This means that at the beginning of the lowest note that is placed in the center or “seam” of the surface. Moving counter-clockwise from that note around the surface would result in each note being an interval of a fifth, and moving in a clockwise direction, each note is a difference of an interval of a fourth. After the completion of the painting (or chroming), the tuner executes the final process, called the “blending”. This means that the pitch of the notes on the surface have been shifted or altered and this step is performed to regain the accurate and centered pitches. The quality of the sound is determined by the skill and the technique of the tuner including the quality of the multiple overtones.



Figure 12: Frontline member performing with double mallets. Photo by Kimani Bishop 2019.

“As yuh know, tuning does come from d length a time yuh spend on pan.... nobody can really teach you tuning but you could watch somebody else see what dey doing but dey what the person doing, it ain’t bound to work for you. Yuh have to find a method and get d octaves to force the fifths and fourths across d notes. I spend must be bout forty years tuning, tuning, try, can’t groove neat and yuh groove the lines ain’t straight. But again, America has, yuh could go to d pawn shop and buy any tool yuh want. If yuh groove on it and yuh doh like how it groove, yuh can get a machine and brush the pan right down, brush out the groove and draw over the line and groove it over” (Griffith. 2018, July 10, 1:02:25-1:03:03) ¹³.

Kelvin also produces the mallets (sticks) for every range, the pan stands for each size of the drums and the refurbishing of the instruments. While he does not complete all of the steps of the process, Kelvin takes the pans to a paint and chroming company at

¹³ As you know, tuning does come from d length a time you spend on pan. Umm, nobody can really teach you tuning but you could watch somebody else see what they are doing but what the person doing, it isn’t bound to work for you. You have to find a method and get d octaves to force the fifths and fourths across d notes. I spend must be bout forty years tuning, tuning, try, can’t groove neat and you groove the lines isn’t straight. But again, America has, you could go to d pawn shop and buy any tool you want. If you groove on it and you don’t like how it groove, you can get a machine and brush the pan right down, brush out the groove and draw over the line and groove it over”

the intersection of Connecticut Boulevard and Granby street in Hartford every Tuesday morning. Kelvin decided to construct a workshop on his property behind his house, and both Kelvin and Cheryl decided that they would hold their Hartford Steel Symphony rehearsals in the workshop space. As the result of this process, Kelvin reflected on his experiences in Trinidad, where pan makers were not confined to strict laws of industrial noises, because those laws were not enforced on the island in comparison to the Greater Hartford area. In spite of all the customary practices he was familiar with, Kelvin was not hesitant to adapt to these new laws and restrictions. He adjusted and agreed to be very compliant and considerate to the environment and his surroundings.



Figure 13: Kelvin Tuning a Powder Coated Steel pan. Photo by Kimani Bishop 2019.

The HSSO has competed in the annual panorama competition in New York over the past twenty-six years. As a result of this participation, Kelvin has been invited to serve as the head tuner or “blender” of steelbands or steel orchestras including “Branches”,

“Metro”, “New Dimension”, and “Silver Stars.” His reputable work has earned him opportunities to produce steel pans for Trinity College, Wesleyan University, the University of Connecticut, the “First Cathedral Church”, and many other steel orchestra commissions across the United States.

2.6 STEELPAN STYLING DIAGRAMS AND THE STEELBAND RANGES CHARTS

The *Tenor* pan is the lead instrument in the entire orchestra. It holds the highest pitches among the family of steel pans. This was the evolution of the “ping-pong” pan in the 1950’s. The principally recognized pioneering contributions include and Anthony Williams who innovated the “Spider Web” pan and Ellie Mannette for his widely influenced chromatic pattern and standardization.

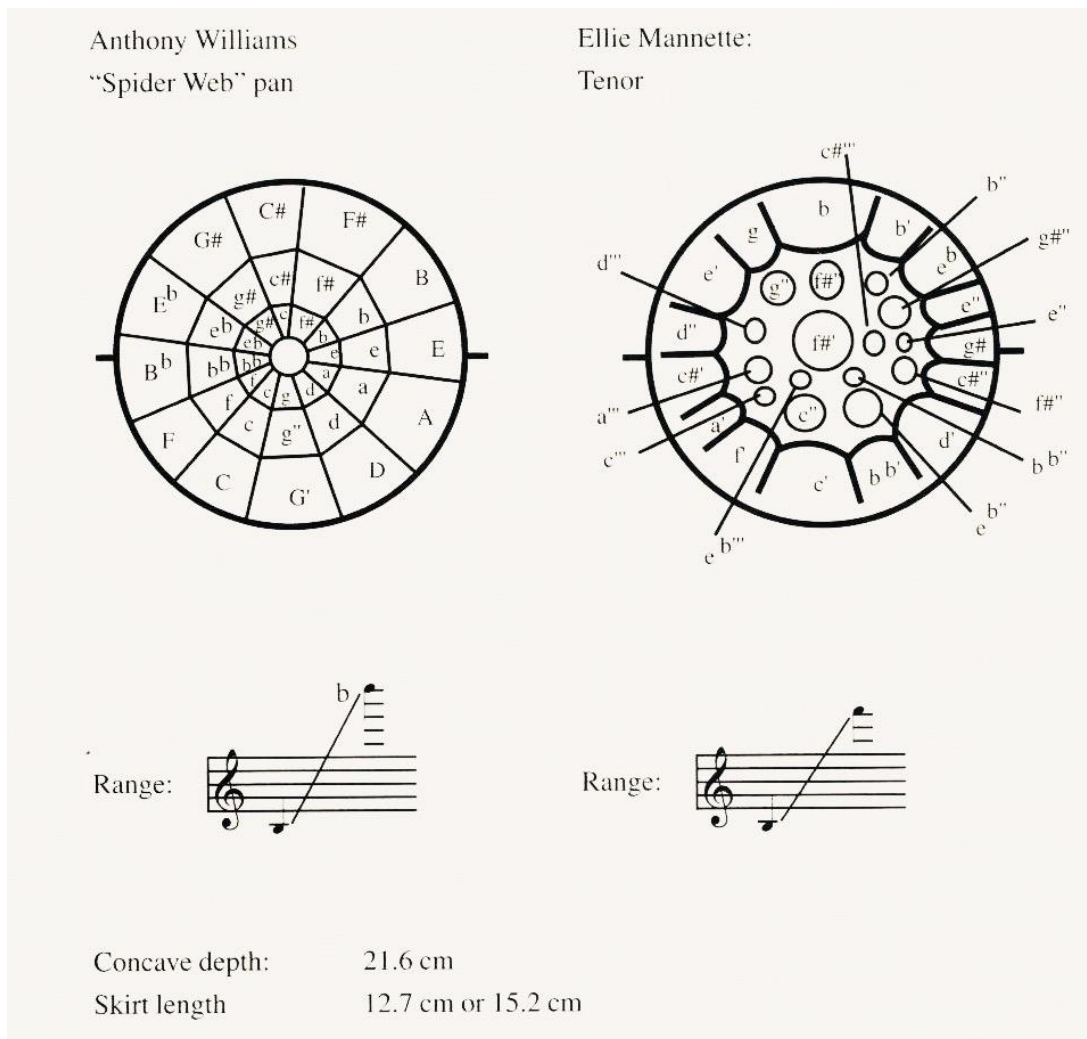


Figure 14: 'Ellie Mannette' and 'Anthony William's' layout (Blake 2005:108).

It ranges from middle C of a piano (also known as C3) to an E6 three octaves higher. The instrument is commonly comprised of twenty-eight to thirty notes with a standard “concave depth of 21.6 centimeters and a skirt length of 12.7 centimeters or 15.2 centimeters” (Blake 2005:108). It was inspired by the idea of balance and symmetrical arrangement that lead to the model of the circle of fourths and fifths. What this means is that the layout rotating clockwise the notes are position in fourths letter wise

and the opposite which would be anti-clockwise is set to a fifth apart. The second in range is the *Double Tenor* pan.

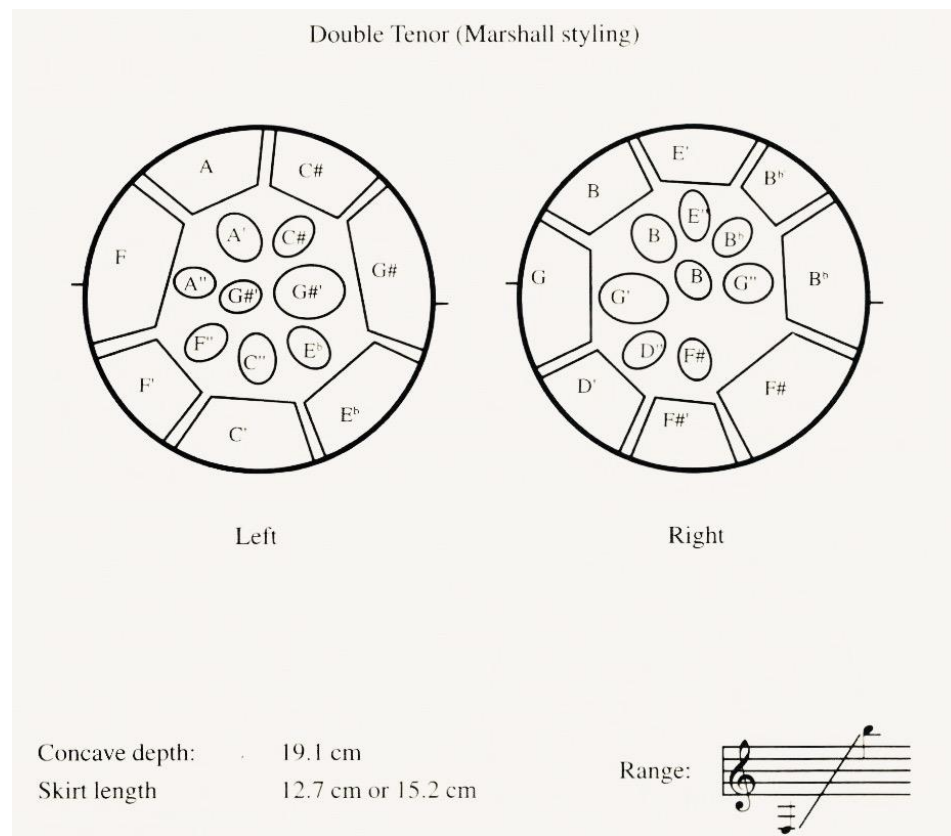


Figure 15: 'Bertie Marshall's' layout (Blake 2005:110).

This instrument was invented by Bertie Marshall, another renowned tuner and pioneer in the steelband association during the 1960s (Dudley 2008:282). Having the same pattern as the *Tenor* pan, the *Double Tenor* has a wider range of notes. It has twenty-nine to thirty notes falling between F3 (below middle C) and Bb5 with a standard “concave depth of 19.1 centimeters and a skirt length of 12.7 centimeters or 15.2 centimeters” (Blake 2005:110). It is an incredibly versatile instrument with characteristics of a very attractive tonal quality (Blake 2005:110). It is mainly used to support to the tenor

including alto or harmony to the lead melody. This is commonly known as the countermelody. “The distribution of notes has a less obvious musical logic, however, compared to the *Double Seconds*, and perhaps for that reason the *Double Tenor* is used less today” (Dudley 2008:282).

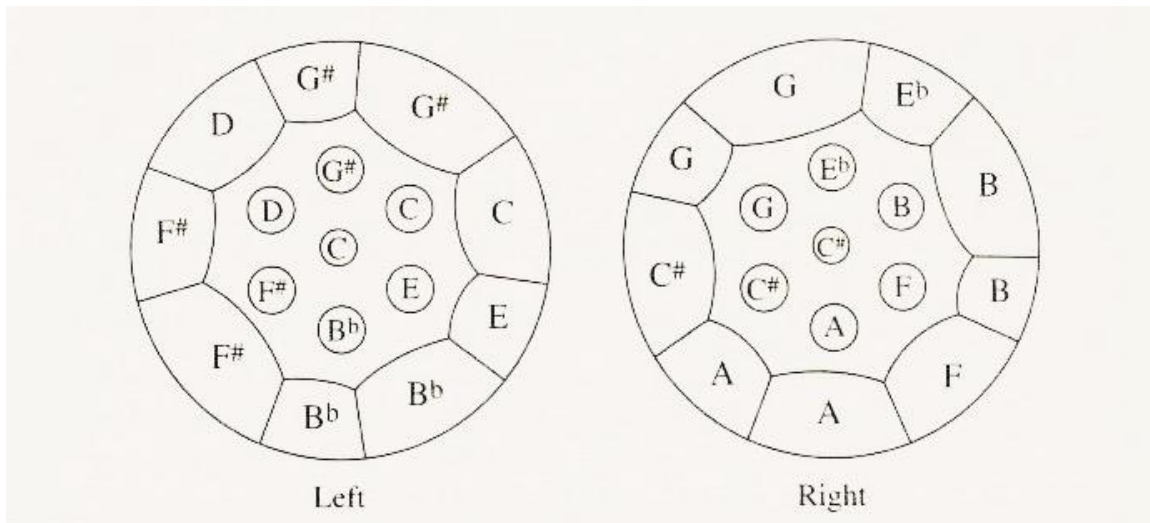


Figure 16: ‘Double Seconds’ layout (Blank 2005:112).

As mentioned above, the Double Second steelpan is the third range in the orchestra and is one of the most widely standardized pans. “The Double Second is used in a steelband to double or harmonize the melody, or sometimes strum” (Dudley 2008:281). “Strum” and “strumming” are local terms used to describe a repetitive harmonic rhythmic pattern of chords. The Double Seconds comprises of two steelpans played together with an average of thirty notes ranging between F3 and C sharp 6 with a standard “concave depth of 15.2 centimeters or 17.8 centimeters and a skirt length of 22.9 centimeters or 25.4 centimeters” (Blake 2005:111). It is complementary to whole tone scales (one on each pan) and this allows the playing of a chromatic scale possible

by a simple alternation of right and left-hand strokes (Dudley 2008:281). Then, there is a transition from the frontline section (lead) on to the middle range pans. The *Double Guitar* is responsible for supporting the melody played by the frontline pans.

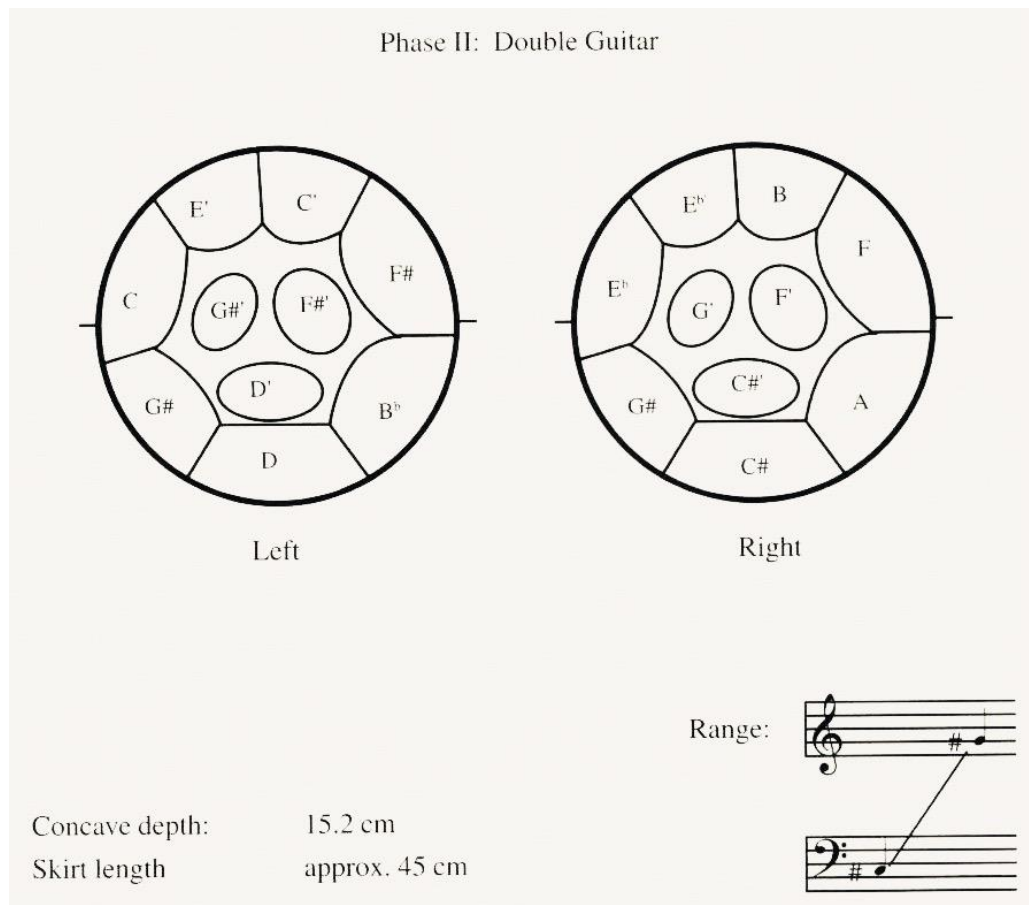


Figure 17: “Phase 2 Steel Orchestra” layout (Blake 2005:112).

Because of their large notes in size and depth in pitch, they are often arranged and performed with the strumming of chords for tonal sonority, which is a vital contribution to the steelpan orchestra. It has an average of twenty notes C sharp 3 and G sharp 4 with a standard “concave depth of 15.2 centimeters and a skirt length of approximately 45

centimeters” (Blake 2005:112). The *Triple Cello* is another member of the middle range section.

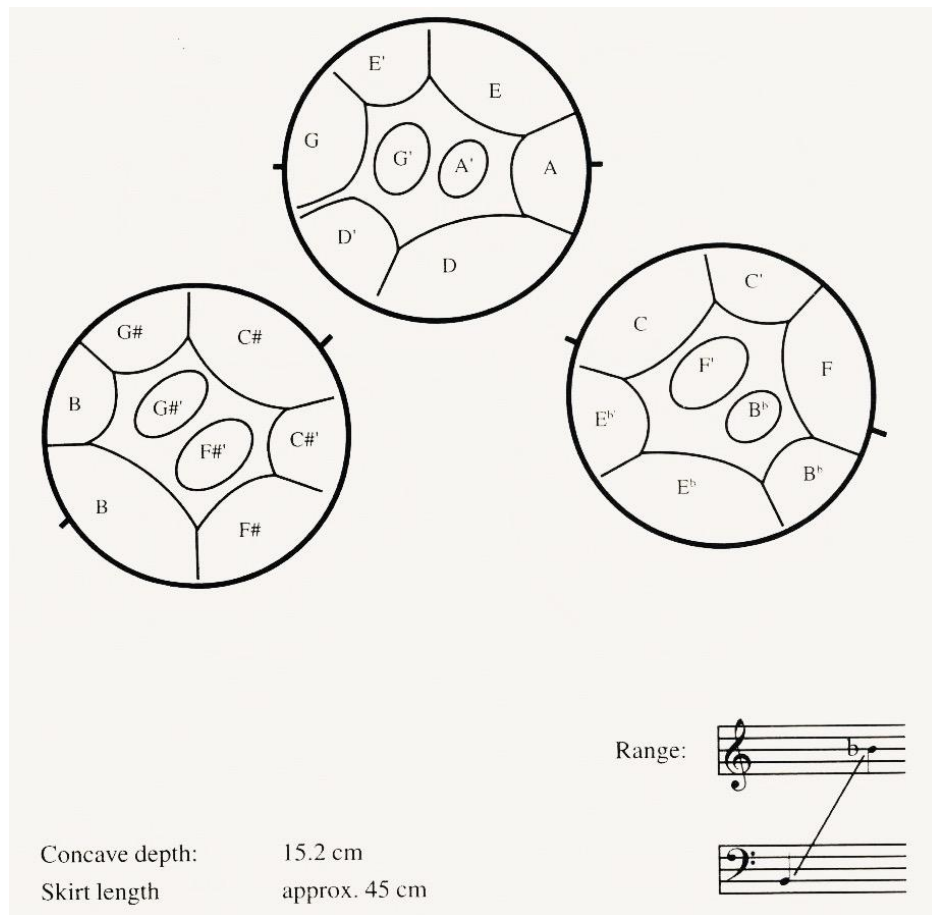


Figure 18: ‘Triple Cellos’ layout (Blake 2005:114).

It is made up of three pans, each having 8 or 9 notes. As a member of the middle range section, it is mainly used as a strumming instrument for lower chords. “The cello’s notes are distributed in chromatic sequence, left to right, through pans 1,2 and 3. They have an average of 24 notes falling between B2 and D5” with a standard “concave depth of 15.2 centimeters and a skirt length of approximately 45 centimeters” (Blake 2005:114). The final section is called the background pans. These pans perform the bass of the

melody. A similar pattern as the *Double Tenors*, the Background pans produce the countermelody of the musical arrangement. “The Tenor Bass comprises a group of our four steelpans with their notes falling between F2 and F sharp 4” with a standard “concave depth of 11.4 centimeters to 12.7 centimeters and a skirt length of approximately 43 centimeters or 76 centimeters” (Blake 2005:116).

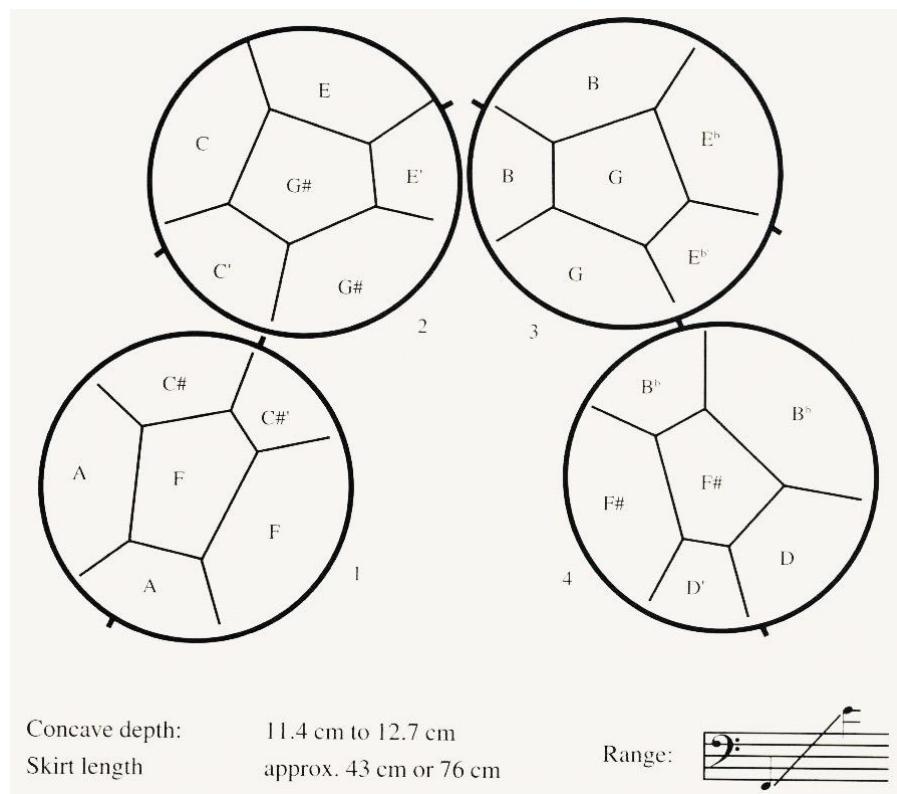


Figure 19: ‘Tenor Bass’ layout (Blake 2005:116).

The *Low Bass* also known as the *Six Bass* “may comprised 6, 9 or 12 pans. The 6-pan has six pans with 3 notes in each, for a total of eighteen notes with a standard concave depth of 11.4 centimeters to 12.7 centimeters and a skirt length of approximately 43 centimeters or 76 centimeters” (Blake 2005:117).

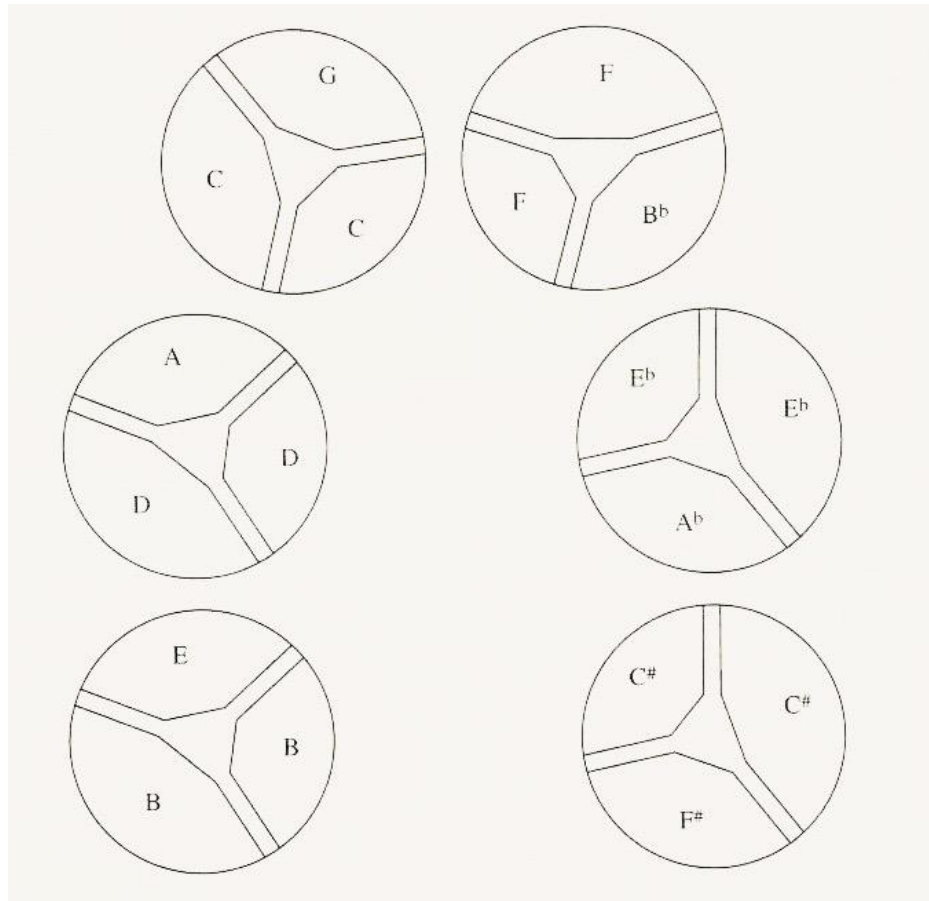


Figure 20: 'Low Bass'/'Six Bass' layout (Blake 2005:284).

The background pans have the largest and lowest sounding notes throughout the entire orchestra. The following information is a musical diagram of the average steelband orchestra in comparison to the string quartet.

Low Tenor	=	1st Violin	=	Soprano
Double Tenor	=	2nd Violin	=	Alto
Double Seconds	=	Violas	=	Contralto
Guitar	=	French Horns	=	
Cello	=	Cello	=	Tenor
Tenor Bass	=	Cello	=	Baritone
Low Bass	=	Double Bass	=	Bass

The percussion section of the steelband is called by the locals the "rhythm section"

or the "engine room". There are other various percussive instruments that are included in the steel orchestra and they are: Iron or Clapper, Triangle Scratcher, Cowbell, Maracas

or Chac-Chac, Claves, Bongo and Conga and Drums (Trapset). The Iron or Clapper “is fashioned from an old motor car’s brake drum and tapped with a long bolt or metal rod for an ear-piercing rhythmic beat. The guiro (or scratcher), also of Latin American origin is a long gourd with parallel grooves cut into its surface. It is played by scratching with short pieces of wire. The cowbell which is tapped with a stick. The Bongo and Conga drums are various skin drums, and both are played with bare hands rhythmically” (Blake 2005:128).

STEELBANDS ARRIVAL IN NORTH AMERICAN SCHOOLS.

In the mid twentieth century, there was a big influx of Caribbean immigrants, migrating to the East Coast of the United States mainly to the state of New York. Among those immigrants were panmen from Trinidad and Tobago seeking new opportunities in a first world country. “Rudolph King, who was known as Rudolph Carter in Trinidad, is considered the first panman from Trinidad to arrive in America. Others who came in those early years were Andrew ‘Pan’ de la Bastide, Cliff Alexis, Vincent Hernandez, Kim Loy Wong, and Ellie Mannette” (Smith 2012, 99). Upon Bastide’s arrival, he settled in California probably in 1958 or 1964 after the completion of a tour with his band Hill 60, and except for one band member, all of them remained in the United States. In 1964, Alexis embarked on a tour with his band, the Trinidad National Steelband. Then he returned to Brooklyn in 1965 to establish residency. In 1966, Hernandez migrated to the United States to continue his work as a pan builder and a pan tuner which he began in 1962. Mr. Wong came to the United States “as a result of his association with the activist

folksinger Pete Seeger and established the first documented community band in the United States at University Settlement in New York City. Wong also established the first known school band at Wiltwyck School in a community north of New York City.” (Smith 2012, 99).

From as early as 1980, there were no more than established five steelband located in Universities throughout the United States. However, over the last three decades, this has increased significantly. “Every spring finds internationally esteemed pan artist such as Andy Narell, Ray Holman, and Liam Teague traveling around the United States to different schools, presenting workshops and performing with steelband students. From Fairbanks, Alaska, to Denton, Texas, from Long Beach, California, to Hattiesburg, Mississippi, steelbands have become an integral part of the U.S. music education landscape” (Smith 2012,112). These programs have attributes of multicultural and world music education and they began to increase in momentum at the end of the twentieth century. The steelband curriculum offers various multicultural information on heritage and hands-on multicultural music instruction. In a traditional steelband, students will learn about various music styles, such as calypso, reggae, and soca, exploring those genres in depth. “Percussion students especially enjoyed performing as major players in an ensemble, rather than being relegated to the back of the rooms as keepers of the beat for the band or orchestra. Even nonmusical students could participate in a steelband and find the experience fun and nonintimidating” (Smith 2012, 113). From as early as elementary and middle school levels, there are musical programs suitable for students to be part of a steelband orchestra and in most programs, students do not require to have

any background experience of playing an instrument of music theory. “In research for her master’s thesis, Janine Tiffe, faculty member in the ethnomusicology division at Kent State University, found that students she studied-most from college in the Midwest-play pan for three reasons: uniqueness, adaptability/accessibility of the instrument, and community” (Smith 2012,113). The first documented school steelband was the Wiltwyck Steelband directed by Kim Lo Wong in 1959. To follow suit was the Tuley High School (now Robert Clemente High School) in Chicago, formed in 1967 and it is still a functionally, quality ranked orchestra in America (Smith 2012, 113). It was directed by S. Thomas Henry, a vocal music teacher for over two decades, whom had no experience playing the instruments but decided to take on the challenge. During an interview with Angela Smith, Mr. Henry shared how the drums arrived at the institution:

“one day in the 1960s, a bunch of steel barrels were dropped off at the school, and the other music teachers scrambled quick. So, I said, ‘What the heck, I’ll give it a shot’. Henry took it upon himself to develop music for his students to play, and the band was eventually in demand for festivals, concerts, and events around the state. One year under Henry’s direction, the Tuley band played 174 performances. In the Tribune article, one of Tuley’s former school principals, Lou Gerald, noted that Henry ‘used the steel drum band to keep many students who might otherwise drop out in school. The drum was a powerful lure, especially for troubled students’. Gerald said that Henry had been ‘instrumental in changing the lives of these young people. Some of them were just determined to drop out of school. But once they got hooked on the steel drum, they stuck around, and they graduated’” (Smith 2012, 114).

Steelbands began to be established in universities in the United States during the 1950s. Folk singer Peter Seeger, founder of the U.S Navy Steel band, started a band at the University of California, Los Angeles, in 1957. Seeger also helped to start the

steelbands at Cornell University, the University of Southern California, and the Bamboushay Steelband at Michigan State in 1962 (Smith 2012, 114). Other universities included the University of Texas with music director's professor Harvey Pittel and professor Robert De Simone of the Panhandlers Steelband. "Lylburn Layer, a graduate student at that time, supervised the purchase of the steel drum ensemble from Trinidad with USC funds,' Pittel said" (Smith 2012, 114). Howard University in Washington D.C established a steelband in 1959. In the 1970s, there were only three university-affiliated steelbands in the United States: an informal ensemble at the University of Colorado at Boulder in 1972 by John Galm with pans made in Trinidad in 1971 by Ellie Mannette's brother; the Miami University (Oxford, Ohio) steelband founded in 1994 by Chris Tanner; Northern Illinois University (NIU) formed in 1973; and the University of Illinois at Urbana formed in 1977. "The 1981 spring/summer issue of the Percussive Arts Society publication featured articles by Allan O'Connor of NIU and former NIU student Jeff Bush, as well as results of a survey that listed six university programs and seven high school programs. Only 4 of the 13 programs listed are from outside the Midwest. Six were in Illinois and one was in Canada. U.S university programs cited in the survey were the University of Akron, Eastern Illinois University, American Conservatory of Music, University of Illinois, and NIU" (Smith 2012, 115). Although there were several pan makers and tuners that contributed to rise of pan education in the United States, the three outstanding Trinidadians that played key roles, particularly in the development of the instrument were: Ellie Mannette, Cliff Alexis, and Liam Teague.

3.1 BIOGRAPHY OF CLIFF ALEXIS (STEELPAN EDUCATOR)

Cliff Alexis a talented pan tuner from Trinidad and Tobago was a full-time musical arts teacher at the St. Paul Public School System, arts magnet school for at-risk students. Alexis had visited Minnesota after five hard years on the road as a traveling musician. “His ex-wife was a teacher in Minnesota, so he decided to move there. ‘My eyes were on the educational system because I had a vision that would do well in schools’” (Smith 2012,116). One day, someone suggested to him that he should apply to the Performing Arts Center, which was part of the St. Paul public schools. He was hired for the position and that was the beginning of Mr. Alexis career in pan education. Mr. Alexis was self-taught in tuning the steelpans because he was determined to master the art and to build a career. He often finds it humorous when sharing the history of his introduction to tuning steelpans while he was working at public school in Minnesota- “a place with minus sixty degrees weather” (Smith 2012,116). He also confessed during an interview with Angela Smith that if he was living in New York or Trinidad, he probably would have never learned how to tune steelpans, (Smith 2012, 116). “Once he mastered the art of tuning and building with the help of his of his friend Patrick Arnold, former head of Pan Trinbago, he began to sell pans. O’Connor convinced him to take a year’s leave of absence to go to NIU to tune pans and help him lead the band. Alexis took O’Connor up on his offer, came to NIU in 1985, and never left” (Smith 2012,116).



Figure 21: Clifford Alexis with his apprentice Dudley 2008:252.

3.2 BIOGRAPHY OF LIAM TEAGUE (STEELPAN EDUCATOR)

Liam Teague became another major contributor to steelpan education at NIU. O'Connor met Liam Teague when Alexis traveled to Trinidad in 1989 as a guest of Pan Trinbago to view the school steelband festival. Two years later, Liam Teague wrote a letter to O'Connor asking him for assistance to begin the NIU undergraduate program in steelpan. O'Connor obtained sufficient funding to support Liam on his educational journey. Liam completed both his undergraduate and his post-graduate degrees. After his success, O'Connor supported Liam in his application to become a faculty member at NIU. This was the beginning of an evolutionary steelpan educational program that began at NIU (Smith 2012,118). "Teague is one of the new generation Trinidadian steelband educators and perhaps the best known. He discovered that steelpan tuners and builder

such as Clifford Alexis and Ellie Mannette were providing instruments to institutions all over the United States and influencing a new generation of players, builder, tuners, teachers, and scholars. His growing knowledge of what was going on provided him even more incentive to continue his studies here” (Smith 2012, 119). With the combined talents of Cliff Alexis and Liam Teague on the same team, the music program at NIU became known as one of the best steelpan music programs in the world. Students at NIU have the opportunity to study technique, musicianship, sight reading, improvisation, arranging, composition, building, and tuning.



Figure 22: Liam Teague, (Blake 2005:235)

THE TRINIDAD ALL-STEEL PERCUSSION ORCHESTRA (T.A.S.P.O)

The acronym for TASPO stands for the Trinidad All Stars Percussion Orchestra that was established in 1951 from an agreement between the leaders of well-known bands to unite and cease the violent clashes among “panmen to evoke a sense of the nation’s efforts to achieve political, economic, and cultural independence” (Johnson 2011,208). However, TASPO was an initiation from TTSBA (Trinidad and Tobago Steel Band Association) in 1949 (Blake 1995,159). In August of that year, the TTSBA decided to become active in the issues affecting the youths of the nation, discussing resolutions in supporting the present government and ending the conflicts between steelband in Port-of Spain.

“In November, Acting Governor P.M Rennison accepted the Youth Council’s request for a committee ‘to carry out a sociological survey of the steelbands in the Port of Spain are and make recommendation where by the cultural and recreational potentialities of steel bands may be encouraged’ Chaired by Canon Farquhar, its member were familiar faces: Lennox Pierre and Carlisle Kerr from the Youth Council; Carlton Ottley from the Education Extension Services; Principle Probation Officer George Moze; journalist and president of the Folklore Society Charles Espinet; Little Carib founder Beryl McBurnie, Bertie Thompson from the Colts Football Club, and Mortimer Mitchell from the Association of Friendly Societies. Pearl Carter was the secretary” (Johnson 2011,211).

The first meeting was held on December 8, 1949 in the center of Port-of Spain. In the discussions, the general issues that needed immediate attention was the fact that there was an informal survey done by George Moze that concluded the warfare of pimps and prostitutes associated with the city bands, and over seventy-nine percent of unemployed or irregular employed panmen that was discover by Carlton Ottley (Johnson 2011,211). Soon after, there was a bitter war between the Invaders and Casablanca, whose captains were Ellie Mannette and Oscar Pile. People were wounded and reported

hospitalized for a few days while charges were laid out to band leaders (Johnson 2011,212). Then on Carnival Monday, February 21st, 1950, a new dawn emerged for the musical culture of Trinidad and Tobago. The members of the Invaders steelband began resisting aggressive and violent responses to Casablanca and vice versa. “Invaders must have already begun peace talks with Casablanca, because on 28 February Ellie Mannette and Oscar Pile met at the Public Library with members of the Farquhar Committee, and agreed to cease hostilities” (Johnson 2011,213). Finally, there was a ‘peace treaty’ among Casablanca, Tokyo, and Invaders on March 1st, 1950, which was sealed over a few drinks at a bar.

“The association’s president was Sydney Gollop. Other members included Port-of Spain solicitor Lennox Pierre, Caryle Kerr, union leader Nathaniel Crichlow and Oscar Pile- all outstanding activists of the steelband movement. Lieutenant Nathaniel Joseph Griffith-born in Barbados-who has been playing with the Trinidad Police Band and was a qualified musician, was co-opted and consented to teach music, a move that certainly contributed to the high number of bands that joined the association” (Blake 1995,159).

After Griffith was sworn in as director/manager of the TASPO, his first project was to transform the band. He presented new ideas to the tuners about the layout of the ping-pong pans, transforming it into chromatically tuned instruments. Anthony Williams and Ellie Manette designed and developed a 23-note ping-pong pan. “A ‘second pan’ or ‘alto pan’ was being was being employed by some bands at the time; TASPO redesigned this pan to include fourteen notes” (Stuempfle 1995,95). This new evolution afforded possibilities for rhythmic dimensions and influenced panmen to interpret a wide range of musical genres. One of the main rationales of the TASPO membership was to have one

member from each steelband uniting and performing together to ignite a friendly bond amongst themselves and defuse the violent incidents in the future. There were initially eleven members:

- Theo Stephens from Free French, San Fernando
- Belgrave Bonaparte from South Symphony
- Andrew de la Bastide from Hill 60
- Philmore "Boots" Davidson from Syncopators of Quarry Street
- Orman "Patsy" Haynes from Casablanca;
- Winston "Spree" Simon from Tokyo
- Dudley Smith from Rising Sun, Belmont
- Ellie Mannette from Invaders in Woodbrook
- Sterling Betancourt from Crossfire, St. James
- Granville Sealey from Tripod, St. James
- Anthony Williams from North Stars, St. James" (Blake 1995,159-160).

The ping-pong players were Ellie Mannette, Theo Stephens, "Patsy" Haynes, Andrew de las Bastide, "Spree" Simon and Granville Sealey. The alto players were Sterling Betancourt and Belgrave Bonaparte. The tenor players were Dudley Smith and Tony Williams and on the bass were Philmore "Boots" Davidson. The music arrangements were done by Lieutenant Nathaniel Joseph Griffith (Blake 1995,160). The instrument layout was designed with all the notes numbered. Middle C on the piano being zero and above the middle C, the notes increased numerically C-sharp was one, D was two, D sharp was three etcetera in that order. This was structured to facilitate the music sheet reading by the players. The tuning was draft was performed by Lennox Pierre (Blake 1995,161). The band traveled to countries such as Martinique, Guadeloupe, Bordeaux, Paris and London. Their first festival performance was on July 26th, 1951 at London's South Bank Exhibition grounds. After these amazing successes of TASPO in London, the middle and upper-class men in Trinidad who tried to suppress the steelpan

realized the great potential that this artistic instrument had on the nation. “After TASPO there was an increase in the “College Boy” bands comprising racially mixed, middle and upper class educated youths which first appeared in the early 1950s” (Blake 1995,162).

Their repertoire comprised songs including:

“Return of the Allies” (March)
Composed by Griffith
“Tennessee Waltz” (Waltz)
“Mango Walk” (Rhumba)
“Enjoy Yourself” (Samba)
“Drink to Me Only” (Morceau)
“Cradle Song” (Lullaby) Brahms
“Parang” (Rhumba)

“Sonny Boy” (Fox Trot) Jolson
“Johnny” (Calypso)
“Golden Earrings” (Bolero)
“Serenata” (Serenade) Toscelli
“Figure” (Calypso)
“Mambo Jambo” (Mambo) Prada
(Stuempfle 1995,96).

BECOMING THE NATIONAL INSTRUMENT OF TRINIDAD AND TOBAGO.

The steelpan has undergone a developmental process for over five decades that has encompassed several stages. From the initial stages of drumming enslaved Africans, to bamboo, to the rhythm sections of metal and iron, to zinc and tin pans that had from four to twenty-three notes carrying a range of three octaves, to fifty-five gallon oil drums with twenty-eight and more notes, to ranges of instruments in a full orchestra (Soprano, Alto, Tenor, Bass), to the G-pan and on to the PHI pan (Percussive Harmonic Instrument). It should be noted that comprehensive research and innovations on the acoustic production of the steelpan have been extensively explored by Professor Brian Copeland, Dean of the Faculty of Engineering at the University of the West Indies.¹⁴ Its rhythms survived the centuries of the Atlantic slave trade of Africans to the Americas. It

¹⁴ I intend to explore his accomplishments in more detail in subsequent research projects.

continues to be the icon and celebrated component of the West-Indian heritage and a patriotic identify for the future generation of the people of Trinidad and Tobago. Then in 1992, the People's National Movement (P.N.M) government of Trinidad and Tobago. "On the thirteenth anniversary of independence in 1992, the new PNM government officially declared the pan the national instrument of Trinidad and Tobago. Many Trinidadians and Tobagonians believed that such a declaration was long overdue, since pan had for years been a central part of their expressive life" (Stuempfle 1995:233).

PERCEIVED STIGMA OF CARIBBEAN IDENTITY

Although calypso music was invented by the people and was often the prime genre adapted to the steelbands, soca music has now become the standard genre for setting steelpan musical compositions. Soca song writers now compose their music considering the possibility of steelband adaptations. The panorama competitions became a major part of the Carnival festivities in the 1970s and in later years, businessmen of small and large companies began to financially sponsor steelbands throughout the country. According to Shannon Dudley, "the competition affirms a spurious notion that calypso has always been the principle genre of steelband performance, an ideological project that served the interest of independence-era cultural nationalist who needed to identify themselves with Afro-Trinidadian art forms" (Aparicio 2003;157). The Jamaican musical genre 'Reggae' was also invented during the 1960s and has also been apted to the steel pan ensemble. "Reggae music has much in common with other forms of Caribbean music. It is, like calypso and Cuban music, a product of the union of African rhythms and European

melody and harmony” (Hebdige 1987;43). Trinidad music is closely connected to the reggae genre, as they share similar rhythms, timbre and tempo. “John John and Hellyard in Port of Spain, where calypso and the steel bands started, sound different from Kingston’s Trench Town and Back o’ Wall which gave birth to reggae. The Israel Vibrations, a Jamaican reggae trio, began as a group of social outcasts tapping out their rhythms on the tin cans, just like the early steel band musicians of Trinidad” (Hebdige 1987;43). In the 1980s politicians have used music for their benefit. Dr. Eric Williams, the first prime minister of Trinidad and Tobago during the 1980s have used street-style calypso for his speech “Massa Day Done” which means- ‘the Days of the White Plantation Owner are Over’. Including Jamaica’s prime minister patterned the idea of using reggae slogans promote his election campaign (Hebdige1987;43). From as early as the 1960s, the era in which several Caribbean countries achieved national independence from European countries, Carnival began to flourish throughout the Lesser Antilles. During that time, Trinidad and Tobago was experiencing success of a unique regional cultural identity, declaring the entire decade as the golden era. On the other hand, Jamaica’s culture also began to establish a unique musical identity for their Reggae and Dancehall genres. Celebratory music became known as “the three Caribbean “R” s: Reggae, Road March, and Rum” (Griffith 2001:51). “Music and food can take on new significance as symbols of identity; curry goat and reggae music can represent Jamaica, just as roti and soca signify Trinidad” (Largey 2016: 298). “The value and importance of Caribbean culture identity and the vital necessity of truly knowing our cultural history” (Griffith 2001: 53).

There have been opposing conflicts of reggae versus soca since 1993 (Nurse 2005: 92). The three-main art-forms of Carnival in Trinidad and Tobago are: masquerading (mas), calypso and steelpan music. These art forms have been incorporated into Jamaica's Carnival (Nurse 2005: 92). Masquerading is a terminology used to describe Carnival participants wearing costumes, mask or portraying an iconic figure. While the development of Carnival began to increase in Jamaica, the cultural manifestation demonstrated the extent of mas, calypso and steelpan into the festival. In 1974, the university of the West Indies (UWI) included steelband into their Carnival festivities (Nurse 2005;94). In 1978, the Orange Carnival in Jamaica included some of Trinidad and Tobago's great calypsonians such as the Might Sparrow, Gypsy, Singing Sandra and Blue Ventures Band. Jamaica then established their first steelband orchestra called the 'UWI's Panoridim Steel Band (Nurse 2005;95). The Jamaican Carnival association began incorporating costumes from Trinidad. "Carnival within the Jamaican cultural context, by assimilating and redefining some of the aesthetic elements borrowed from the Trinidad-style Carnival, while integrating various symbols and expressions characteristic of Jamaican popular culture, especially music" (Nurse 2005; 100). Trinidad Carnival along with soca and calypso music was deemed as the best genre second to reggae and dancehall. Then in the early 1990s, Jamaicans began to fuse both soca and reggae music and called it "Soggae Carnival" (Nurse 2005; 104). As soca music began to stir the hearts of the Jamaican people, the eastern and southern Caribbean as embraced the genre just as well. It became well receptive by the neighboring Caribbean countries. The difference between reggae and soca music is that reggae features an

alternative downbeat, preferably in the bass line and the soca emphasizes the upbeat, (Nurse 2005; 107).

These similarities and connections of both genres could have ignited a stimulus and perceived mind-set in listeners, associating the soca genre and the steelpan music to the Jamaican culture, but these mixed genres have also generated unsettling tension between both Jamaican's and Trinbagonians since the late 1980s.

WEST-INDIAN-AMERICAN'S PERCEPTION OF THE DEVELOPMENT OF THE STEELPAN

Davy Jagan, a national of Trinidad and Tobago, was born in 1959. He and his family migrated to Hartford Connecticut in 1995. Jagan grew up in the time that was considered the 'Golden Era' of steelpan in Trinidad and have had many experiences of its development over the years. When Jagan was asked about his first encounter with the instrument, he shared one of his monumental memories, where he would accompany his mother and father in attending the panorama festivals, both Monday and Tuesday of Carnival, in the capital of Port-of- Spain. He gave a vivid explanation of the activities and celebrations that were displayed. It was a tradition that the spectators and other non-participants in the festivities known as 'bacchanal,' would locate a spot in the Queen's Park Oval located in the upper parts of Port-of-Spain, where the steelbands and masqueraders would perform. The government of Trinidad and Tobago would hire contactors and engineering companies to construct two large bleachers more than five hundred feet long and fifteen feet high in a parallel position. These staircases were

labeled as the North Stand and the Grand Stand, depending on the cardinal points where the staircase was constructed. Spectators would pack huge blankets and large plastic bags to shade themselves and their families from the elements ranging from strong sunlight to pouring rain. Onlookers would prepare meals the night before the festivities so that they could throughout the day. Jagan's first memory of steelpan was in 1967. As he recalled the festivities from that year, he explained how masqueraders re-enacted the United States Naval Sailors costume, while tossing powder all around as they crossed the grand stage in collaboration with the steelbands and their floats. Floats were known as huge metal structures welded together that could withstand the weight of the instruments while firmly holding the pans so that all of the members could energetically perform together. The floats were designed with wheels so that they could be easily re-located while performing. Steelband music was the main source of entertainment during the festivities. "The music in those days were a bit slower than what is being played today" (Jagan, 2019, March 25,2:20-2:24). Calypsonian "Kitchener's" composition entitled '67 was performed by the majority of steelbands that year and eventually won the road march prize. He mentioned that the appearance of the steelpans was not as quality sounding as it is today. When asked the question if the steelbands were as large as it is today with numerous members and instrumentation, he responded negatively. "Steelbands weren't as big as that time. There weren't a lot of variety of pan. The range of things that they could do with it at that time wasn't very big because it was still developing. But you can actually hear the music in what they're playing, particularly the base pans. You felt that inside as a young kid. The rest of it sounded like banging on iron" (Jagan 2019 March 25, 3:45-4:24). In addition, he remembered the joy and excitement he had for Pierrot

Grenade. Jagan's definition of Pierrot Grenade was related to traditional masquerading where these masqueraders would portray colorful costumes and would participate in a lyrical battle rhythmically. He compared it to rap music today and the battle between rap musicians also known as "free-style" rap. When asked the question about actively listening to steelpan music, he answered with the following categories: 'Sailors' (because of his initial introduction to Carnival and the steelpan), 'Violence' (because of the horrendous violent history that contributed to the development of the instrument due to many of the steelband members who were imprisoned specifically for violent behavior. "They were always armed with large knives. What you would call machetes. No guns, guns were not a thing in those days, rods of iron and a ball of spike (ball spike)" (Jagan 2019, March 25, 10:52-11:08). In 1975 when Jagan was in high-school he remembered witnessing a 'pan-clash'¹⁵ or violence between steelband members. "You would just see the pans meet up at some point and then all hell breaks loose. They would pull out their machetes and whatever and then yuh know went after each other. And when it's all over, you would see the hospital full with all these casualties" (Jagan 2019, March 25, 12:00-12:36). These clashes were often caused by the final and official results from the Panorama festivities. The authorities were very helpless in regard to this kind of situation. In those days, there were a limited number of police officers that served the nation while the people came from all over island to Port-of-Spain for the festivities.

Curtis Greenidge is another Trinidad-American who has lived in the United States (Hartford) for a period of ten years and more. When asked his opinion about the

¹⁵ Pan-clash is defined as a violent dispute between rival steelband members due to the results of the panorama festivities.

appreciation or unappreciation of the steelpan and the music arrange for it by the people of Trinidad and Tobago, his response was that:

“more can be done. I honestly think that we need, and not just Trinidad, I'm talking about all pan people, all over the world. We need to show more appreciation for this instrument. It has come a long, long way and the more we put more appreciating this instrument, it could reach out of this world. There are a lot of people that still don't know a lot about the instrument. It have some people just like listening to it, it just have some people just like playing it, you understanding where I'm coming from? We can definitely appreciate it more by doing a lot more for the instrument” (Greenidge 2019 March 25, 6:40-7:16).

Curtis believes that the identity of the steelpan that was invented in Trinidad and Tobago and it will be maintained if steelpan is introduced in the academic curriculum into the public and private educational institutions. He talked about incorporating the tuning of the instrument as well as the arranging into the educational academia. He underscored the importance of these attributions that should be taught to the younger generations so that the culture will live on. “You going to school to do Math, you going to school to tune, make and arrange for this instrument as well. If we could acknowledge that in the schools, get that done, we don't even have to worry about losing the identity. It's ours and it will always be ours. If we could get to push that level of the instrument, definitely” (Greenidge 2019 March 25, 8:30-8-55). He would like to see the founding of community programs in every vicinity throughout the country. He then draws reference to one of the village programs that were sustained and maintained by the youth of Trinidad and Tobago. “These programs or organization could influence the minds of young people in a positive way. Just like Mount D'or have 'Best Village' or they call it 'Better Village'. And in 'Best Village' which I can go back to, that I grew up in, more than the steelpan is if we could

have most of these groups, they don't have plenty steel drums or end up in the community like if you're doing for 'Best Village' shows and other stuff like that. If we could get that. We have the pans in the schools yes, but if we could get some of the instruments in certain groups. Getting it into community itself also" (Greendige 2019 March 25, 11:51-12:46). That would be the advice he would give to the government of Trinidad and Tobago if given the opportunity. Growing up in town of Mount D'or, Curtis developed a passion for African rhythms and drumming. Although he could have followed in his uncle's footsteps, Curtis wanted to pursue a different path. He occasionally participated in the rhythm sections of steelbands in support of his Uncle. Upon migrating to Hartford, Curtis became aware of the necessity of steelpan in the United States and the substantial impact of his contribution and has become increasingly connected to his participation with the steelpan.

CONCLUSION:

The goal of this research project has been the examination of the origins and evolution of the steelpan, with a particular focus on the establishment of the Hartford Steel Symphony Orchestra and their significant impact to the Hartford community. The chronological progression of the history of Trinidad and Tobago to the present developmental phase of the steelpan in the twenty-first century.

I conducted interviews with members of the Hartford Steel Symphony Orchestra (HSSO) and documented their weekly rehearsals, musical and performances during their festival season. Having the opportunity to witness extensive arrangements forthwith and rehearsals by rote, accumulating video recordings of the construction and engineering of the instrument, and the ongoing information about the expansion of the tenor pan and patterning its structure to formulate other ranges. Also, the discovery of the HSSO impact to the Hartford community through musical festivities and the supplication/donation of the instruments to educational institutions and community organizations. Through my research I learned that it was the people of Trinidad and Tobago and their struggle for freedom that led to the blossoming of the steelpan. Also, steelpan pioneers who were recognized for their remarkable contribution to the evolution of the instrument. Additionally, the documentation and information from materials that have factual evidence of the development of the steelpan and the steps led to the declaration of the national instrument of Trinidad and Tobago in 1992 after numerous debates between political parties and the leading, superior ministers of the island.

By learning more stories about the migration of the steelpan to the North American Continent I conducted interviews with Trinidadian-Americans individually with questions centered around how they were first introduced to the instrument and their views about the future of the steelpan. The consensus shows that they believe that the has the potential to be an extraordinary instrument if it has a better appreciation by the government and the people of Trinidad and Tobago through education and global festivities combined with full orchestral performances.

BIBLIOGRAPHY

Books:

- Aparicio, Frances R., and Cándida Frances Jáquez. *Musical Migrations: Transnationalism and Cultural Hybridity in Latin/o America*. New York: Palgrave Macmillan, 2003.
- Batson, Dawn K. "Voices of Steel: A Historical Perspective. In *Carnival*": Culture in Action-The Trinidad Experience. New York, NY: Routledge 2004.
- Battle, Stanley F. "The State of Black Hartford". *The Urban League of Greater Hartford, Inc.* Copyright June 1994.
- Blake, I.R Felix. "The Trinidad and Tobago Steel Pan": History and Evolution. Library of Congress Cataloguing in Publication Data, *Spain by Grafique 85, S.L-Molins de Rie*. Copyright 1995.
- Blejewski, Hallie. "Engineering a National Instrument": Inventions and innovations in Trinidadian steelpan. 2015.
- Chernoff, John Miller. *African Rhythm and African Sensibility: Aesthetics and Social Action in African Musical Idioms*. Chicago: U of Chicago, 1979. Phoenix Books (Chicago, Ill.).
- Dudley, Shannon. "Carnival music in Trinidad": Experiencing music, expressing culture (Global music series). *New York: Oxford University Press*. Copyright 2004.
- Dudley, Shannon. "Music from Behind the Bridge": Steelband spirit and politics in Trinidad and Tobago. *New York: Oxford University Press*. Copyright 2008.

Galm, Eric A. *The Berimbau: Soul of Brazilian Music*. Univeristy Press of Mississippi, 2010.

Gossai, Murrell, Gossai, Hemchand, and Murrell, Nathaniel Samuel. *Religion, Culture, and Tradition in the Caribbean*. 1st ed. New York: St. Martin's, 2000.

Griffith, Glyne A. *Caribbean Cultural Identities*. Lewisburg, Pa.: London: Bucknell UP; Associated UPes, 2001. *Bucknell Review*; v. 44, No. 2.

Hebdige, Dick. *Cut 'n' Mix: Culture, Identity, and Caribbean Music*. London; New York: Routledge, 1990.

Hill, Donald. "Calypso calaloo": Early carnival music in Trinidad. Gainesville: *University Press of Florida*. Copyright 1993.

Hume, Yanique, and Aaron Kamugisha. *Caribbean Popular Culture: Power, Politics and Performance*. Kingston; Miami: Ian Randle, 2016.

Ho, Christine G. T., and Keith. Nurse. *Globalisation, Diaspora and Caribbean Popular Culture*. Kingston; Miami: Ian Randle, 2005.

Johnson, Kim. "From tin pan to TASPO": Steelband in Trinidad, 1939-1951. *Kingston, Jamaica: University of the West Indies Press*. Copyright 2011.

Kuss, Malena. *Music in Latin America and the Caribbean: An Encyclopedic History*. Volume 1,2 and 3 *Performing Beliefs: Indigenous Peoples of South America, Central America, and Mexico*. Austin: U of Texas, 2004. Joe R. and Teresa Lozano Long Ser. in *Latin American and Latino Art and Culture*.

Libin, Laurence. Notable Acquisitions (Metropolitan Museum of Art), No. 1965/1975
(1965 - 1975), pp. 167-170

Manuel, Peter, and Michael D. Largey. Caribbean Currents: Caribbean Music from
Rumba to Reggae. Third ed. Philadelphia, Pennsylvania: Temple UP, 2016.

Manuel, Peter. "Tales, Tunes, and Tassa Drums": Retention and invention in Indo-
Caribbean music. Urbana; Chicago; *Springfield: University of Illinois Press*.
Copyright 2015.

Manuel, Peter, and Michael D. Largey. Caribbean Currents: Caribbean Music from
Rumba to Reggae. Third ed. Philadelphia, Pennsylvania: Temple UP, 2016..

Martin, Andrew R. "A Voice of Steel Through the Iron Curtain." *American Music*, Vol. 29,
No. 3 (Fall 2011), pp. 353-380

Munro, Martin. "Different Drummers": Rhythm and Race in the Americas (Music of the
African Diaspora). *Berkeley, CA: U of California P*. Copyright 2010.

Nathaniel, Daina. "From Animal Skin to Oil Drum": African Agency through the Steelband
Movement. *Albany, NY: State U of New York P*. Copyright 2012.

Nurse, A. Myrna. "Unheard voices": The rise of Steelband and calypso in the Caribbean
and North America. I Universe. Copyright 2007.

Riggio, Milla. "Carnival: Culture in action": The Trinidad experience (Worlds of
performance). *New York: Routledge*. Copyright 2004.

Sheehy, Daniel, "South America, Mexico, Central America and the Caribbean". *Garland Publishing Inc. New York*. Copyright 1988.

Smith, Angela. *Steel Drums and Steelbands a History*. Lanham, Md.: Scarecrow, 2012.

Solís, Ted. "Performing Ethnomusicology": Teaching and Representation in World Music Ensembles. Berkeley, CA: U of California P. Copyright 2004.

Stuempfle, Stephen. "The Steelband Movement": The forging of a national art in Trinidad and Tobago. *Philadelphia: University of Pennsylvania Press*. (1995).

Tanner, Chris. "The Steelband Game Plan": Strategies for starting, building, and maintaining your pan program. Lanham [Md.]: Rowman & Littlefield Education. MENC, the National Association for Music Education. Copyright 2007.

The Encyclopedia of Caribbean Religions. U of Illinois, 2012. Web. Thomas, Jeffery. "A history of Pan and the Evolution of the steelband in Trinidad and Tobago". 1985.

Williams, Eric. "History of the people of Trinidad and Tobago". London: A. Deutsch. History of the people of Trinidad and Tobago. *Andre Deutsch Limited, Great Britain, 1964*, copyright 1962.

Williams, Kenyon. "Steel Bands in American Schools: What they are, what they do, and why They're Growing: Steel Drum Ensembles Promote Multicultural Musical Education and Attract a Wide Range of Students." *Music Educators Journal*, Vol. 94, No. 4 (Mar. 2008), pp. 52-57.

<https://doi.org/10.1080/10588167.2017.1415569>

Websites:

Copeland, Brian, information about the G-Pan and the Phi-Pan:

<https://www.panonthenet.com/spotlight/2010/copeland-bio-2-28-10.htm>

Additional G-Pan and Phi Pan Information:

<https://sta.uwi.edu/news/releases/release.asp?id=93>

Garvey, Amy Jacques. "News Releases." 10 Jan. 2019,

sta.uwi.edu/news/releases/release.asp?id=93%2B%28gpan%2B%2Bphi%2Bpan%2Binfo%29.

Malm, Krister, a forum for the steel pan instrument:

<http://stockholmsteelband.se/pan/tuning/>: pan making website

[https://makezine.com/2012/05/01/text-tool-steel-pan-tuning-2/\(future](https://makezine.com/2012/05/01/text-tool-steel-pan-tuning-2/(future) of steel pans)

Kronman, Ulf. "Steel Pan Tuning - Tempering." Visit the Website of My Sponsors

Stockholm Steelband, 26 Apr. 2015,

stockholmsteelband.se/pan/tuning/building08_tempering.php.