

Article

Soundscapes of Papua: Cultural-based pedagogical approach through electroacoustic music

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Abstract

This article investigates the innovative pedagogical approaches and cultural integration of electroacoustic music in Papua, Indonesia, through the work of composer and educator Markus Rumbino. Born in 1989 in Jayapura, Papua, Rumbino is the first professional electroacoustic composer from eastern Indonesia. After returning to Jayapura in 2013 to join the Institute of Arts and Culture (ISBI) Tanah Papua, he faced unique challenges in a region where electroacoustic music is largely unfamiliar and often misunderstood. The study explores how Rumbino bridges Western music education with Indigenous Papuan sound environments to foster cultural identity and confidence among his students – primarily Indigenous from East Indonesia, including natives from the Papuan Highlands with limited formal musical training. Through detailed interviews and analysis, the article examines his innovative use of soundscape composition, listening exercises and soundwalk methodologies as pedagogical tools. By engaging students in critical listening and exploration of their local soundscapes, Rumbino reconnects them with their cultural heritage while introducing contemporary artistic expressions. Situating his methods within the broader context of soundscape literature and inclusive educational practices in electroacoustic music, this article highlights the transformative potential of integrating local soundscapes into music education. This contributes to discussions on culturally responsive teaching methods and the role of environmental sounds in fostering musical creativity.

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1. Introduction

Electroacoustic music, characterised by the integration of natural sounds and electronic technology, offers a rich medium for cultural expression and education. This article investigates the innovative pedagogical approaches and cultural integration of electroacoustic music in Papua, Indonesia, through the work of Markus Rumbino – a composer and educator born in 1989 in Jayapura. As the only professional electroacoustic composer from eastern Indonesia, his career illuminates both the challenges and the opportunities in a region where such music is largely unknown to art communities and local populations.

The primary objective of this study is to examine how Rumbino's pedagogical methods bridge Western music education and the Indigenous sound environments of Papua, thereby fostering cultural identity and confidence among his students. By analysing his unique application of soundscape composition, listening exercises and soundwalk methodologies, the research seeks to contribute to the discourse on inclusive music education practices that respect and incorporate local cultural contexts.

Electroacoustic music encompasses a broad range of practices where electronic technology is used to manipulate acoustic sound sources, creating new musical textures and experiences (Collins 2017). Within this domain, soundscape composition focuses on the artistic use of environmental sounds, recorded and organised to

reflect and interpret specific acoustic environments (Westerkamp 2002). Soundscape composition fits within the larger framework of electroacoustic music by using technology to capture, manipulate and present the sounds of natural and human environments, often aiming to evoke a sense of place or narrative.

In this context, Rumbino's work exemplifies how soundscape composition can serve as a powerful pedagogical tool. His methods align with established soundscape practices while introducing innovative approaches tailored to the Papuan context. By encouraging students to engage in active listening and to explore their Indigenous soundscapes, he fosters a deeper connection between music education and cultural identity.

1.1. Motivation and structure of this article

The motivation behind this research stems from the need to understand and document the unique challenges and methodologies involved in teaching electroacoustic music in culturally diverse and educationally underserved regions such as Papua. Given the scarcity of literature on electroacoustic music in this region, particularly concerning educational practices, this study aims to fill a significant gap in the scholarship.

The article is structured as follows:

- Section 2 provides a contextual background, discussing the sociocultural landscape of Papua, the dynamics of its music scene and the evolution of experimental music in Jayapura.
- Section 3 offers a detailed biography of Markus Rumbino, highlighting his educational journey, artistic influences and

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reasons for returning to Papua to contribute to music education.

- Section 4 delves into his pedagogical methods, exploring how he applies soundscape exploration, listening exercises and sound-walks in his teaching.
- Section 5 examines how Rumbino connects with cultural heritage through his artistic practice and inspired teaching methods, bridging Western music with the cultural context of Papua.
- Section 6 discusses the challenges and innovations in his work, including the impact on his students, many of whom come from the highland areas of Papua.
- Conclusion summarises the findings and explores potential future developments in the context of both Papua and Indonesia more broadly.

2. Understanding the sociocultural landscape of Papua

To comprehend the significance of Markus Rumbino's work, it is essential to understand the sociocultural and political context of Papua, Indonesia. This background sets the stage for appreciating the unique challenges and opportunities presented in the region's music education landscape.

2.1. The sociopolitical dynamics of Papua

Papua, Indonesia's easternmost province, is characterised by a rich tapestry of Indigenous cultures and complex political dynamics. The region's quest for self-determination has been a contentious issue, rooted in historical, political and sociocultural factors (Viartasiwi 2018). The implementation of special autonomy laws was intended to address these challenges by granting greater local governance. However, the effectiveness of these policies has been debated, with concerns over corruption and marginalisation of Indigenous voices (Barter and Wangge 2022).

The conflict between Papuans and the Indonesian government is deeply intertwined with issues of cultural identity, historical grievances and resource control (Ondawame 2006). The region's development has been further hindered by infrastructural challenges and economic disparities, although recent initiatives have aimed to improve human development indices (Malik 2019).

Jayapura, the capital city, serves as a microcosm of these dynamics. As a strategic border city, it has experienced rapid urbanisation and demographic changes, leading to a complex blend of informal settlements and formal developments (Suhartini and Jones 2019). The city's population growth, surpassing national averages, reflects both the opportunities and the challenges of integrating diverse ethnic groups within a rapidly changing urban landscape.

2.2. The music scene in Jayapura, Papua

The music scene in Jayapura is a vibrant amalgamation of traditional Papuan sounds and contemporary influences. Traditional music plays a crucial role in the social and ceremonial life of Indigenous communities, featuring instruments such as the tifa drum and bamboo flutes that produce distinctive rhythms and melodies. These sounds are not merely artistic expressions but are also deeply embedded in the cultural and spiritual practices of the people.

In recent years, modern musical expressions have emerged, with local artists blending traditional sounds with genres such as pop, reggae and hip hop. These musicians often address themes

related to Papuan identity, social issues and political commentary, using music as a platform for cultural expression and advocacy (Smythe 2013). The music scene thus serves as an important medium for preserving cultural heritage while engaging with contemporary issues.

2.3. Evolution of experimental music in Jayapura

The development of experimental music in Jayapura is relatively recent and closely tied to national trends in Indonesia. Experimental and electronic music activities have historically been centred in major cities such as Jakarta and Yogyakarta, often facing challenges due to limited support and infrastructure (Setiawan 2011). In Papua, these challenges are magnified by the region's educational disparities and lack of exposure to avant-garde musical practices.

Formal music education in Papua began with the establishment of the Institute of Arts and Culture (ISBI) Tanah Papua in 2014 (Papua 2023). Prior to this, there were few opportunities for structured music education, particularly in experimental genres. The arrival of Markus Rumbino at ISBI Tanah Papua marked a significant turning point. After completing his studies in Yogyakarta, a city known for its artistic vibrancy, Rumbino returned to Jayapura in 2013 with the goal of fostering a new generation of musicians equipped with both traditional and contemporary skills.

His efforts can be seen as foundational for the experimental music movement in eastern Indonesia, especially within the context of the 'Black Culture region', a term that acknowledges the distinct cultural identities of Melanesian Papuans within Indonesia. By introducing electroacoustic and soundscape composition techniques, Rumbino has expanded the musical horizons of his students and colleagues.

Collaborations with other artists, such as contemporary choreographer and dancer Darlene Litaay, have further enriched the artistic landscape. Litaay, who incorporated sound idioms into her work during her Master's studies in digital arts at the City University of New York, reflects the growing interdisciplinary approaches in Papuan art. Additionally, local musicians such as Asep Nayak, though primarily involved in electronic dance music and based in Yogyakarta, contribute to the broader understanding of electronic music's presence in Indonesian culture.

Given the complexities and disparities between Java and Papua, Rumbino's work represents a significant milestone in the region's musical evolution. His commitment to integrating experimental music within education not only enriches the local music scene but also empowers Indigenous students to explore and express their cultural identities through new musical paradigms.

3. Markus Rumbino: early life and influences

3.1. 1989: early life

Markus Rumbino's (Figure 1) unique background has significantly shaped his musical approach and pedagogy. Born in 1989 and raised in Papua, the region's rich cultural heritage and stunning natural environment have deeply influenced his life. This backdrop is evident in his work as a composer and music educator at the ISBI Tanah Papua.

Rumbino's childhood, filled with traditional Papuan music, such as the *Wor* songs from Biak sung by his extended family, deeply informed his artistic sensibilities. He also spent much of his free time playing in the forest, surrounded by the inspiring sounds of nature.



Figure 1. Markus Rumbino. Photo courtesy of Markus Rumbino.

Growing up in Jayapura, Rumbino's musical journey unfolded amid the city's burgeoning popular music scene, where he participated in bands performing at entertainment venues and churches.

3.2. *ISI Yogyakarta (undergraduate study, 2008)*

In 2008, Rumbino pursued formal music education at the Institut Seni Indonesia (ISI) Yogyakarta, majoring in music composition. Although his initial interest was in popular music, he completed his studies with a solid foundation in Western music theory, analysis and composition. Exposure to Yogyakarta's vibrant experimental music scene significantly influenced Rumbino's musical thinking, encouraging him to push the boundaries of conventional music forms.

Additionally, masterclasses with renowned Indonesian composer Slamet Abdul Sjukur provided significant insights into contemporary music practices, enriching Rumbino's musical understanding and techniques.

At the end of his studies in Jogja, Rumbino's encounter with the first author (Hartono) sparked his interest in soundscape works. The first author's soundscape piece, *Bali Soundscape*, inspired Rumbino to explore soundscape composition further. This interest led to him buying the portable recording device Zoom H4n, which he used to capture the sounds around him. This experience marked the beginning of Rumbino's self-directed learning process in field recording.

4. Soundscape exploration and field recording: challenges and development

Following these formative experiences, Rumbino returned to Jayapura in 2013 to take on a role as a music educator at ISBI Tanah Papua, a position offered by the Papua Provincial Cultural Agency. Joining ISBI Tanah Papua as a lecturer in the Music Arts programme marked.

4.1. *Returning to Papua and reconciling Western music curriculum (2013)*

As Rumbino began teaching in Papua, he faced a significant challenge: reconciling his Western music knowledge with the cultural diversity of his students, who hailed from seven distinct Indigenous territories: Mamta/Tabi, Saireri, Anim Ha, La Pago, Me Pago, Domberai, and Bomberai (Sari 2023).

This cultural mismatch was further complicated by the curriculum he had to adopt from ISI Denpasar, which was oriented towards Western music. During the interview¹, Rumbino emphasised that one of the main issues when ISBI Tanah Papua was established was the need for more academic teaching staff from Papua. This indirectly impacted the design of the curriculum. Consequently, in the initial years, ISBI Tanah Papua was under the auspices of ISI Denpasar, which had been established for a long time in Denpasar, Bali. However, the consequence was that they had to follow a very Western-oriented curriculum, which had been used earlier at ISI Denpasar.

This Western-centric curriculum created difficulties in the teaching process, as his students struggled to read Western music notation and understand other subjects such as analysis and composition. Students with a strong traditional music background faced particular challenges due to a common misconception that music composition is solely associated with Western instruments such as the piano and guitar. This misconception added to the complexity of teaching approaches. This complexity was intensified by the significant differences between the students' practical music skills, which were generally better than their theoretical knowledge. The curriculum's limited relevance to his students' cultural backgrounds impeded the learning process, and Rumbino knew he had to find a new approach to reach his students effectively.

In an effort to enhance the effectiveness of music education at ISBI Tanah Papua, Rumbino recognised the need to design an approach that is more accommodating to Papua's culture and musical traditions. The students' backgrounds, who came from seven cultural regions of Papua with rich, authentic music that had not been influenced by the West, were seen as potential to be harnessed in the music learning process at ISBI Tanah Papua.

4.2. *Challenges and adaptation*

Rumbino's challenges reconciling his Western music knowledge with his students' cultural diversity were compounded by difficulties in his artistic activities. While he sought to adapt his teaching methods to better suit his students' needs, he also faced obstacles in reconnecting with the local music community. Many local musicians were not very familiar with contemporary music,

¹Interview with Markus Rumbino conducted by Rocky Irvano Nanlohy (third author) and Stevie J. Sutanto (second author) on Wednesday, 22 May 2024.



Figure 2. Performance of 'Nin dan Rur' in Wamena, Papua. Photo courtesy of Indrayadi Hatta.

making it challenging for Rumbino to compose for instruments, as the skill levels of the musicians differed significantly from those he had encountered in Yogyakarta. Given these challenges, Rumbino realised that recording sounds or soundscapes could be a form of contemporary music activity that could be continuously pursued in the inadequate environment of Papua. This realisation marked the beginning of his active involvement in field recording. Equipped with a simple Zoom H4n recorder, he began a mission to document the diverse soundscapes of Papua, preserving the melodies of traditional chants, the rhythms of everyday life and the natural sounds of the region. In addition to field recording, Rumbino also began experimenting with traditional Papuan instruments and chants using electronic equipment such as guitar effect pedals. These activities provided him with valuable inspiration, which he incorporated into his music, creating works that reflected Papua's vibrant cultural landscapes and natural beauty.

4.3. Collaborative projects and community engagement

4.3.1. Komunitas Eksyen Papua (2014)

Rumbino's artistic activities ultimately led to opportunities for collaboration with other artists, inspiring many in the local community. These collaborations facilitated partnerships across various disciplines, including dance, theatre and research in ethnomusicology. In 2014, together with other Papuan artists, he helped establish Komunitas Eksyen Papua, an artistic collective dedicated to fostering creative activities and cultural exchange between Papuan

culture and cultures from outside Papua. This community became a hub for contemporary art activities beyond Rumbino's musical pursuits in Jayapura, organising regular performances and workshops, and inviting artists, successfully attracting audiences from various communities. Most of these activities were held monthly, showcasing performances from diverse talents.

4.3.2. 'Nin dan Rur': a milestone composition (2016)

In 2016, Rumbino received a grant from Yayasan Kelola, one of Indonesia's leading arts foundations. This support allowed him to complete his composition 'Nin dan Rur' (Figure 2), which presented a combination of field recordings and musical elements to audiences in Lanny Jaya and Wamena. 'Nin dan Rur' marked a key moment in Rumbino's work, representing the outcome of his years of exploration in field recording and composition. In this piece, he used sound materials from his field recordings for the first time, incorporating them as the main component of the live electronics. These were combined with live performances of various traditional and non-musical instruments from Papua, such as the tifa (a percussion instrument made from lenggua wood and lizard skin), pikon (a mouth harp), a nine-string guitar, and a bow and arrow (a traditional hunting tool).

4.3.3. Environmental advocacy and field recording expeditions (2017)

Following the completion of 'Nin dan Rur', Rumbino became increasingly aware of environmental issues affecting his homeland.



Figure 3. Rumbino and some local community members of Yokiwa village. Photo courtesy of Markus Rumbino.

In 2017, concerns regarding the critically endangered Bird of Paradise (Cendrawasih) came to the forefront due to widespread hunting. This situation concerned Rumbino, who had grown up surrounded by the sounds of Papua's natural environment, including the Bird of Paradise. He engaged with the Indigenous community of Yokiwa village (Figure 3) during his artistic activities.

The community believed that the Bird of Paradise still existed in their ancestral forest, Rhuna. However, widespread hunting had made the bird elusive, causing it to remain deeper in the forest. According to local legend, the Bird of Paradise was thought to possess the ability to predict future events. These stories inspired Rumbino to embark on an expedition to the Rhuna forest to record the Bird of Paradise's song. Accompanied by Irma Awoitauw, his fiancée, and a member of the Yokiwa village's tribal leadership, as well as several local community members, Rumbino travelled to the Rhuna forest.

The journey took about 90 minutes by car from Sentani, a district in Jayapura, followed by a 45-minute walk into the forest. They arrived at the forest in the evening and spent the night in a traditional hut used by local fishermen to catch fish in Telaga Wakulu, a lake within the forest. They aimed to record the Bird of Paradise's song in the morning, as local knowledge indicated that it was typically audible only during the morning and evening.

The following day at 4 a.m., Rumbino was awakened by a sound from an animal known locally as the red-legged chicken. He quickly activated his recorder to capture this sound. About an hour later, he finally heard the Bird of Paradise's song amid the Rhuna forest, approximately 200 metres away from their campsite. Rumbino attempted to record the Bird of Paradise's song several times at varying distances, with the final attempt made at about 10 metres from the tree where the bird was perched.

During this expedition, he used a simple Zoom H4n recorder attached to a wooden pole about 10–15 metres long to bring the recorder closer to the Bird of Paradise. For about an hour, Rumbino lay under the tree where the bird was perched, listening intently to the sounds of the forest while his recorder captured the

Bird of Paradise's song. The recording captured not only Bird of Paradise's song but also many other interesting sounds, including those of different birds and the sound of an airplane landing at Sentani Airport.

Unsatisfied with the initial results, Rumbino returned to the same location in the evening to conduct another field recording, which was dominated by the sounds of other birds and the forest's crickets that began to chirp as the sun set. This successful recording underscores Rumbino's strong connection to Papua's local soundscape and his creativity in addressing the limitations of his recording tools, making it essential to recount this activity in detail.

5. Graduate study and theoretical enrichment at ISI Yogyakarta (2019–2021)

Rumbino decided to return to Jogja to pursue his graduate study at ISI Yogyakarta in 2019. This decision was driven by his desire for self-improvement and government regulations requiring every lecturer to hold a Master's degree. Rumbino initially aimed to pursue a Master's degree in Art Creation; however, following discussions with the director of ISI Yogyakarta, he was convinced that a focus on Art Studies would more effectively facilitate his skill development.

Although his busy schedule in completing his studies resulted in a cessation of field recording, Rumbino's interest in soundscape composition remained intact. During his time in Jogja, he actively listened to works by Barry Truax and Hildegard Westerkamp. Building on this engagement with soundscape compositions, his encounter with Sutanto Mendut, a lecturer teaching the course Music and Environment, further deepened his understanding of the cultural relationship between sound and the environment. This experience not only broadened Rumbino's perspective but also reinforced his conviction in the music teaching methods he employed at ISBI Tanah Papua.

5.1. Returning to ISBI Tanah Papua: implementing enhanced pedagogy (2021)

In 2021, after completing his graduate studies at ISI Jogjakarta, Rumbino returned to ISBI Tanah Papua to continue teaching composition. Drawing from his own creative journey, particularly his experiences in 2013, Rumbino sought to address the gap between conventional music composition education and the rich cultural soundscapes of Papua. He believed that by introducing soundscape composition to his students, he could bridge the gap between music composition and their cultural heritage.

Central to his approach is the introduction to soundscape composition and soundwalk activities, which he uses not as ends in themselves but as methods to guide students in connecting with their surroundings and understanding the cultural significance of sound. While soundscape composition might seem to be the focus, Rumbino's main objective is to employ these techniques to deepen his students' cultural understanding and creativity – an approach that will be further explored in the following sections.

5.2. Soundscape composition as pedagogical bridge

Rumbino's experience with field recordings and soundscape exploration inspired him to encourage his students to engage more deeply with their surroundings. Central to this approach was introducing them to the World Soundscape Project (WSP), initiated by Murray Schafer at Simon Fraser University in the late 1960s and early 1970s. By listening to and discussing soundscape compositions, particularly the works of Hildegard Westerkamp, Rumbino demonstrated how everyday sounds from the environment could be transformed into music.

This reflected a broader shift in music education during the late twentieth century when educators such as Schafer, John Paynter and George Self began emphasising sound as the core of music teaching and learning (Dionyssiou 2019). The 'New Sounds in the Classroom' movement recognised that music could emerge from any source – whether traditional instruments, objects, or even body sounds – challenging older notions that music had to follow strict aesthetic rules set by past composers. For Rumbino, this shift helped democratise composition, making it more accessible to his students and relevant to their everyday lives.

He also linked this approach to their cultural heritage, encouraging students to experiment with sounds and rhythms from their villages. For instance, they might create a rhythm using traditional instruments such as the tifa, then develop it further by incorporating environmental sounds, resulting in unique rhythmic patterns and sonic environments. This not only deepened their understanding of music but also encouraged collaboration among students from diverse villages, fostering an exchange of ideas rooted in their shared cultural identities.

5.3. Active listening and soundwalks

In addition to exploring the unique materials of their villages, Rumbino guides his students through a soundwalk activity, which he breaks down into three parts: listening while recording, taking notes and reflection. Before engaging in the soundwalk, however, Rumbino had to address a significant challenge his students faced – technological literacy. Many struggled with basic computer skills, making it difficult for them to work with music software. To

overcome this, he introduced simple recording techniques using the only portable recorder available, a Zoom H4n, allowing students to capture the sounds of their surroundings without the complexities of advanced technology.

While one student recorded, the others walked around, listened and identified interesting sounds they could capture later. Rumbino had them record sounds around the campus area, which included the main road, and instructed them to first listen by ear to find an intriguing spot. Then, they used headphones through the recorder to listen from the microphone's perspective. One key lesson Rumbino emphasised was that, even without moving their heads, they could manipulate the spatial orientation of sound by moving and rotating the microphone. While recording, students discovered the spatial movement of sounds in their environment – such as a car exhaust moving from afar to close or the passing siren of an ambulance.

These sonic events sparked discussions about spatialisation in sound. Rather than explaining how to virtually pan sounds using software, Rumbino encouraged students to consider how sounds naturally move during traditional rituals.

For instance, in Oksibil (a district of highland Papua), musicians and singers dynamically shift with their movements. Students shared how these spatial characteristics varied across regions, influenced by different dance forms and customs. This exchange helped them appreciate the unique sonic nuances of each other's cultures. Taking notes on their auditory experiences, a practice Rumbino also uses, allowed students to reflect deeply on how these sounds affected them personally.

This reflective process fostered creative thinking and inspired them to explore ways of incorporating these sounds into their compositions. Through discussions with Rumbino and their peers, the students developed a stronger connection to their cultural heritage and began questioning conventional definitions of music. They started to explore the potential of creating compositions using the sounds and rhythms from their own villages. Importantly, Rumbino emphasised that while this process celebrates their cultural identity, it is not meant to reject Western music. Instead, he encouraged them, whenever possible, to understand Western music traditions in order to better appreciate and elevate their cultural practices.

6. Two case studies: student application of soundscape methods

Through soundscape composition and soundwalk activity, Rumbino has created a bridge between music education and cultural heritage for his students. By encouraging them to engage with their surroundings, reflect on their auditory experiences and explore the sounds of their local environment, he has fostered a deeper understanding of both music and their cultural identity. His methods have not only democratised composition, making it accessible to students regardless of their technological literacy, but they have also inspired them to challenge conventional definitions of music and explore new creative possibilities.

In the following sections, we will examine two case studies that demonstrate how Rumbino's students applied these lessons: Siprianus Bulet Weruin's exploration of local bamboo flute sounds as compositional material; and Alista Sedik together with Melfritin Waimbo's commitment to exploring local traditional instruments



Figure 4. Siprianus Bulet Weruin demonstrating the sound of a bamboo flute. Photo courtesy of Markus Rumbino.

separate from their ritual contexts. These cases highlight how the students embraced Rumbino's teachings and transformed their cultural traditions into innovative musical expressions.

6.1. Case study 1: Siprianus Bulet Weruin

Siprianus Bulet Weruin (Figure 4), a native of Kei Island in Maluku, was one of Rumbino's students. In 2019, in his late fifties, he began an undergraduate programme, motivated by a desire to earn a degree before retiring. Before this, Weruin had spent most of his life teaching at Santo Paulus Abepura Junior High School in Jayapura, where he instructed students in how to play the guitar, bamboo flute and recorder. During his first two years of undergraduate studies, he focused on Western music analysis, acoustic and organology, and piano practice as part of the curriculum. It was not until his third and fourth years, when he met Rumbino, that his focus shifted to composition, specifically soundscape compositions, soundwalk activities and engaging in regular discussions with Rumbino.

In class, Rumbino learned about Weruin's skill in crafting bamboo flutes and expressed interest in the process. During their discussions, Weruin voiced his concerns about the unpredictability of bamboo as a source material, which affected the tuning of his instruments. He shared an anecdote about accidentally crafting 20 bamboo flutes with what he considered 'incorrect' tuning. Having a Catholic religious background, Weruin was accustomed to hymns sung in 'correct' tuning. Rumbino saw this as an opportunity to explore the 'incorrect' tuning, inviting three colleagues to play these 'incorrectly' tuned bamboo flutes.

Together, they produced clashing pitches that merged into microtonal harmonies and created unique timbral textures. Weruin was fascinated by the resulting sound and began experimenting with different fingering combinations. To delve deeper into this new territory, Rumbino encouraged Weruin to

document his process in two ways: notation and audio recording. The notation process involved identifying the sounds he liked from the bamboo flutes, developing his own notation system for fingering, and explaining the reasoning behind his system to Rumbino and their colleagues.

The audio recordings provided material for class discussions, allowing them to review and analyse sound phenomena that had gone unnoticed during experimentation and identify areas for further exploration. Ultimately, Weruin's fascination with the bamboo flute culminated in his final thesis, in which he explored the tambur flute from Yoka village in Sentani, deepening his interest in this traditional instrument.

6.2. Case study 2: collaboration between Alista Sedik and Melfitrin Waimbo

Alista Sedik from Tambrauw and Melfitrin Waimbo (Figure 5) from Serui, two of Rumbino's female students, initially focused on learning Western music theory during their early years, much like Weruin. As they advanced in their studies, they developed a fascination with contemporary instrumental extended techniques, which led them to create their own notation system for playing traditional Papuan instruments, including the tifa, fuu (an aerophone instrument made of a seashell) and pikon. When they met Rumbino during their third and fourth years, they began experimenting with unconventional singing and playing techniques, which sparked controversy among the older generation.

Singing two or more traditional songs simultaneously – clashing the lyrics and melody – was considered disrespectful by some, who believed it could offend their ancestors and even cause illness. Additionally, there were traditional taboos against women playing the tifa, a prohibition Sedik and Waimbo were determined to challenge. Through their learning process, which emphasised attentive listening and sound exploration, they argued that they



Figure 5. Alista Sedik (left); photo courtesy of Alista Sedik. Melfitrin Waimbo (right); photo courtesy of Pekan Kebudayaan Nasional.

viewed the instruments as sound generators, distinct from their ritual context, and thus open to sonic experimentation. Their creative works reflected their commitment to this approach, and over time, they began to gain acceptance from their community.

After graduating, Sedik and Waimbo were selected to participate in the *Dawai Tanah Papua* programme at the Pekan Kebudayaan Nasional Art Festival, organised by the minister of education and culture. They formed an all-female music group and performed at the festival, marking a significant achievement in their journey. Rumbino, serving as one of the festival's committee members, praised their significant artistic progress. During a reunion with Rumbino at the event, they expressed their gratitude to him, acknowledging that the knowledge and skills they had acquired were finally being put to meaningful use.

7. Conclusion

The exploration of Markus Rumbino's work underscores the transformative potential of electroacoustic music as a pedagogical tool in culturally diverse and educationally underserved regions such as Papua. His innovative approaches bridge the gap between Western music education and Indigenous Papuan sound environments, fostering cultural identity, confidence and creativity among his students. By integrating traditional Papuan sounds with contemporary electroacoustic techniques, Rumbino not only makes music education more accessible but also deeply relevant to his students' cultural contexts.

7.1. Addressing educational challenges

One of the significant challenges highlighted in this study is the incompatibility of Western-centric curricula with the cultural backgrounds of Papuan students. The lack of local academic teaching staff and the reliance on curricula from institutions such

as ISI Denpasar have led to educational practices that are often disconnected from students' experiences and traditions. Rumbino's methods demonstrate how adapting pedagogical approaches to include Indigenous cultural elements can enhance student engagement and learning outcomes. His focus on soundscape composition and active listening empowers students to draw upon their cultural heritage as a source of inspiration and material for their compositions.

7.2. Social and cultural implications

Rumbino's work has important social and cultural implications. By encouraging students to explore and reinterpret their cultural traditions, he fosters a sense of pride and ownership over their heritage. This is particularly significant in Papua, where issues of cultural identity are intertwined with historical grievances and sociopolitical dynamics. His methods challenge conventional definitions of music and break down barriers associated with gender and traditional roles, as seen in the case studies of Alista Sedik and Melfitrin Waimbo. These students not only challenged taboos but also contributed to evolving cultural practices by integrating traditional instruments into new musical contexts.

7.3. Educational approaches and innovations

From an educational standpoint, Rumbino's approaches align with contemporary theories of culturally responsive teaching and inclusive pedagogy. By situating learning within the students' cultural frames of reference, he enhances their academic achievement and personal development. His use of soundwalks, field recordings and the exploration of environmental sounds democratises music education, making it accessible to students regardless of their technological literacy or prior exposure to Western music theory. Furthermore, his methods address practical

challenges such as limited resources and technological constraints. By utilising simple recording equipment such as the Zoom H4n and emphasising experiential learning, he overcomes barriers that might otherwise hinder the educational process. This adaptability is crucial in contexts where infrastructure and resources are limited.

7.4. Future developments and recommendations

The findings of this study suggest several avenues for future development:

- *Curriculum Development*: There is a need for the establishment of culturally integrated curricula that respect and incorporate local traditions and knowledge systems. Educational institutions in Papua and similar regions should consider revising their curricula to be more inclusive of Indigenous cultural content.
- *Capacity Building*: Addressing the shortage of local academic teaching staff requires investment in capacity building. Encouraging and supporting more Indigenous individuals to pursue advanced degrees in music and education can help ensure that curricula and teaching methods are culturally relevant.
- *Collaborative Initiatives*: Fostering collaborations between artists, educators and institutions from different regions can enhance the exchange of ideas and promote holistic understanding in music education. Programmes that facilitate such collaborations can lead to innovative educational practices and enrich the artistic landscape.
- *Community Engagement*: Expanding initiatives such as Komunitas Eksyen Papua provides platforms for creative and cultural exchanges. Community-based programmes that involve local artists, elders and cultural leaders can strengthen the connection between educational institutions and the communities they serve.
- *Research and Documentation*: Continued research into Indigenous musical practices and their integration into contemporary education is essential. Documentation of methods, outcomes and best practices can inform educators and policymakers, contributing to the broader field of music education.

7.5. Implications for wider Indonesian society

Rumbino's work offers valuable insights for other regions in Indonesia facing similar cultural and educational disparities. His methods demonstrate that embracing local cultural heritage within educational frameworks can lead to more effective and meaningful learning experiences. This approach can help address broader issues of cultural marginalisation and promote inclusivity within the national education system.

7.6. Final reflections

In conclusion, the case of Markus Rumbino exemplifies how innovative, culturally responsive pedagogical approaches in

electroacoustic music can have profound impacts on students and communities. His work not only preserves and celebrates Papuan heritage but also paves the way for artistic and educational innovations that resonate with the lived experiences of Indigenous populations. By acknowledging and integrating the rich cultural soundscapes of Papua, educators can create more engaging and relevant learning environments that empower students to become confident, creative and culturally grounded individuals.

This study contributes to the discourse on inclusive music education and highlights the importance of contextually appropriate teaching methods. It underscores the potential for electroacoustic music to serve as a catalyst for cultural expression, education and social change in diverse settings. Future research and practice should continue to explore and expand upon these findings, fostering a more equitable and culturally rich educational landscape in Indonesia and beyond.

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