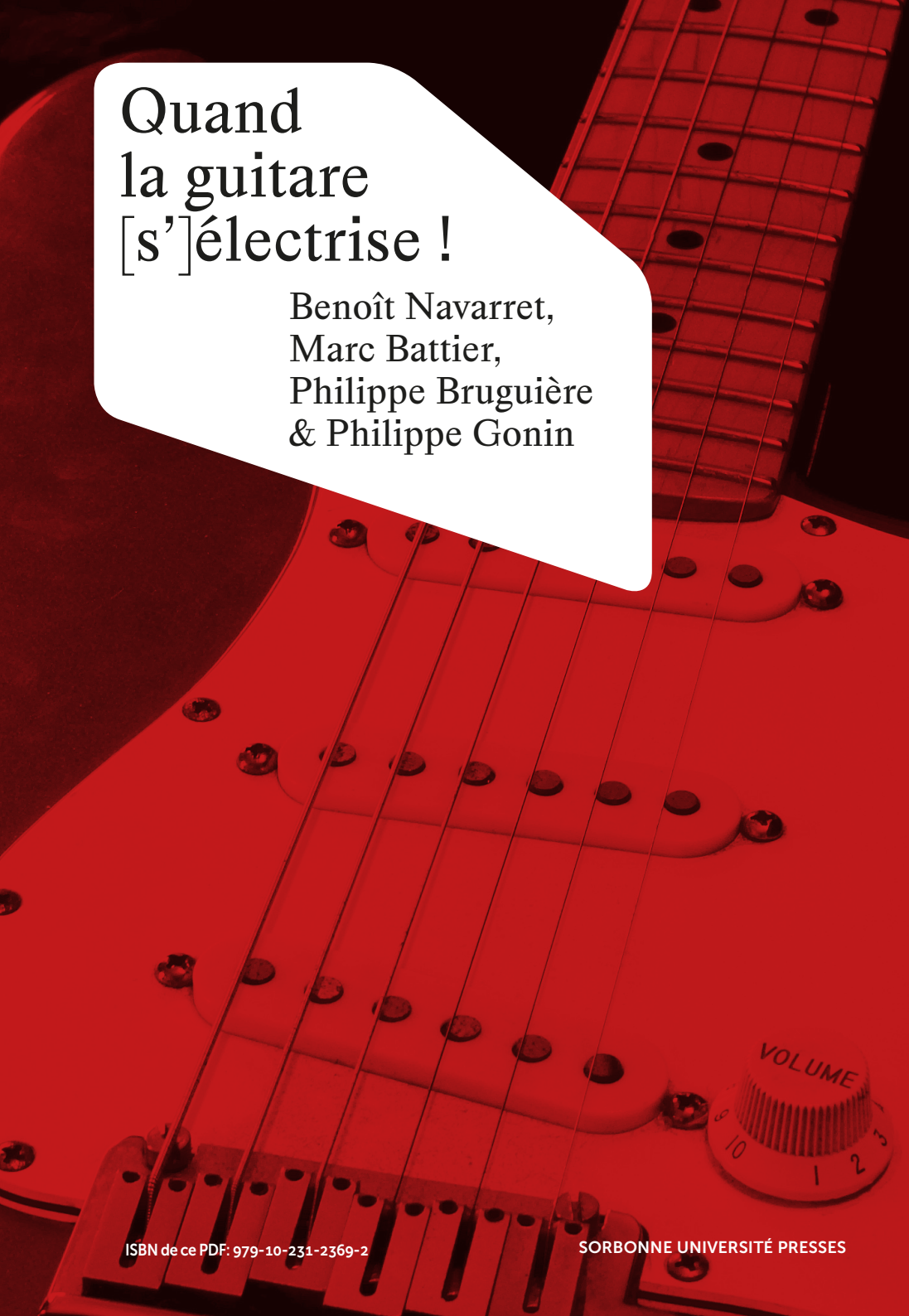
Quand la guitare [s']électrise !

Benoît Navarret,
Marc Battier,
Philippe Bruguière
& Philippe Gonin



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MusiqueS

La guitare électrique serait-elle l'instrument emblématique du XX^e siècle ? Son histoire a marqué plusieurs générations de musiciens et d'auditeurs : sa sonorité et sa puissance (qu'elle doit aussi à ses composants externes : pédales d'effets, amplificateurs et haut-parleurs), sa versatilité, son impact visuel et toutes les significations qui lui ont été associées en font un objet incontournable, une véritable icône planétaire.

Et pourtant l'étude scientifique de son histoire, de son répertoire ou de sa technologie n'a fait que commencer, tout en allant en s'amplifiant. Peu connue, la recherche menée autour de cet instrument mérite qu'on s'y attarde, tant les approches possibles sont riches et variées : car l'instrument ne peut s'étudier en-dehors de son contexte, ni sans raconter l'histoire de ces pionniers qui se mirent à bricoler des formes hybrides d'instruments, puisant dans l'organologie classique en la mêlant aux techniques de la radio, du microphone et de tout ce que « la fée électricité » a pu apporter en matière d'innovation sonore. L'on ne peut aussi ignorer la construction symbolique de ces figures mythiques, les *guitar heroes*, qui font rêver les foules et alimentent les fantasmes de nombreux amateurs. Sans oublier la multiplicité de ses usages, du club intimiste aux gigantesques stades ou festivals, de son expérimentation dans la musique contemporaine au refus délibéré de la virtuosité dans des genres plus nihilistes, et même dans certaines pratiques religieuses !

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QUAND LA GUITARE [S']ÉLECTRISE !

À la mémoire d'André Duchossoir (1949-2020)

MusiqueS

Série « MusiqueS & Sciences » – Instrumentarium

Issue des travaux interdisciplinaires soutenus par l'Institut Collegium Musicæ de l'Alliance Sorbonne Université depuis sa création en 2015, la série « MusiqueS & Sciences » est une collection dont le but est de susciter, développer et valoriser les recherches ayant pour sujet les musiques, passées et présentes, de toutes origines. Elle invite ainsi à mêler les disciplines des sciences humaines et des sciences exactes telles que l'acoustique, les technologies de la musique et du son, la musicologie, l'ethnomusicologie, la psychologie cognitive, l'informatique musicale, mais aussi les métiers de la conservation et de la lutherie.

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Le Collegium Musicæ – institut de Sorbonne Université – regroupe des organismes de recherche et de formation spécialisés dans le domaine musical. Il favorise, depuis sa création en 2015, les travaux menés en interdisciplinarité entre sciences exactes, sciences humaines et pratiques musicales. La collection « Instrumentarium », consacrée aux instruments et familles d'instruments, est la première des séries de publications issues des travaux scientifiques du Collegium Musicæ. Suscitant le croisement des regards entre acousticiens, musicologues, musiciens et luthiers, ces travaux permettent la confrontation inédite de données et analyses acoustiques, organologiques et techniques, historiques et culturelles, ainsi que celles relevant de la création et de l'innovation.

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Benoît Navarret, Marc Battier,
Philippe Bruguière & Philippe Gonin (dir.)

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CHAPITRE 3

REFLECTING THE 1950S POPULAR LIFESTYLE: THE DANELECTRO *3412 SHORT HORN* BASS

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UN REFLET DU MODE DE VIE POPULAIRE DES ANNÉES 1950 : LA DANELECTRO 3412 *SHORT HORN BASS* DE DANELECTRO

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ABSTRACT

Despite its significant role in the shaping of modern popular music, the electric bass is arguably one of the most understated exponents in the history of electronic musical instruments. Moreover, although recent publications have investigated the development of iconic basses by well-known manufacturers, such as Fender, Gibson or Rickenbacker, relatively little has been written about companies offering mass-produced, cheap instruments on which thousands of teenagers trained their fingers and their ears. Among them Danelectro certainly deserves a distinguished place: from the mid-1950s and throughout the 1960s this American company created several innovative instrument models which have now become classic among performers and collectors. These instruments were generally made in a fast, efficient and economical way, using inexpensive materials and radical construction methods, thus resulting in low-budget products addressed mainly to young customers. One such example is the *3412 Short Horn* electric bass, one of Danelectro's typical, though less prominent models. Using this bass as a case study this article will present and analyse Danelectro's ground-breaking, and often unconventional, approach in the design and production of musical instruments. Additionally, the article will discuss how this instrument reflects the consumerist lifestyle of post-war America by pointing out previously unnwoticed influences that various aspects of contemporary popular culture, ranging from sport cars, trendy furniture, and household appliances, to mass media, female fashion and fast food, had on the musical instrument industry.

BIOGRAPHY

Panagiotis Poulopoulos is an organologist with a diverse academic background including a BA in Conservation of Antiquities and Works of Art (TEI Athens), a Master in Musical Instrument Research and a PhD in Organology (both University of Edinburgh). He has worked in various museums in Greece, Great Britain and Germany, and since 2016 he has been Advisory Board Member of ICOM-CIMCIM. He is the author of several articles on the documentation, preservation

and exhibition of historical musical instruments as well as contributor to The Grove Dictionary of Musical Instruments. His latest projects have focused on aspects of musical instrument manufacture and trade from the eighteenth to the twentieth centuries, focusing on plucked and bowed stringed instruments. He is currently post-doc fellow of the Volkswagen Foundation "Research in Museums" program researching the development of the pedal harp between 1780 and 1830 at the Research Institute for the History of Science and Technology in the Deutsches Museum, Munich.

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RÉSUMÉ

Malgré son rôle important dans la formation de la musique populaire moderne, la basse électrique est sans doute l'un des éléments les plus sous-estimés de l'histoire des instruments de musique électriques. De plus, bien que des publications récentes aient étudié le développement de basses emblématiques de fabricants bien connus, tels que Fender, Gibson ou Rickenbacker, relativement peu de choses ont été écrites sur les entreprises offrant des instruments bon marché, produits en série, sur lesquels des milliers d'adolescents ont formé leurs doigts et leurs oreilles. Parmi eux, Danelectro mérite certainement une place de choix : à partir du milieu des années 1950 et tout au long des années 1960, cette société américaine a créé plusieurs modèles d'instruments innovants qui sont devenus des classiques parmi les interprètes et les collectionneurs. Ces instruments étaient généralement fabriqués de manière rapide, efficace et économique, en utilisant des matériaux peu coûteux et des méthodes de construction radicales, ce qui se traduisait par des produits à petit budget destinés principalement aux jeunes clients. L'un de ces exemples est la basse électrique *3412 Short Horn*, l'un des modèles typiques de Danelectro, bien que moins connus que d'autres. En utilisant cette basse comme étude de cas, cet article présentera et analysera l'approche novatrice et souvent non conventionnelle de Danelectro dans la conception et la production d'instruments de musique. En outre, l'article examinera comment cet instrument reflète le mode de vie consumériste de l'Amérique d'après-

guerre en soulignant les influences inaperçues de divers aspects de la culture populaire contemporaine – voitures de sport, mobilier, appareils électroménagers, médias de masse, mode féminine, restauration rapide – sur l'industrie des instruments de musique.

BIOGRAPHIE

Panagiotis Poulopoulos est organologue et possède une formation universitaire diversifiée, notamment une licence en conservation des antiquités et des œuvres d'art (TEI Athènes), une maîtrise en recherche sur les instruments de musique et un doctorat en organologie (tous deux de l'université d'Édimbourg). Il a travaillé dans divers musées en Grèce, en Grande-Bretagne et en Allemagne, et depuis 2016, il est membre du conseil consultatif de l'ICOM-CIMCIM. Il est l'auteur de plusieurs articles sur la documentation, la préservation et l'exposition d'instruments de musique historiques et a contribué au *Grove Dictionary of Musical Instruments*. Ses derniers projets se sont concentrés sur les aspects de la fabrication et du commerce d'instruments de musique du XVIII^e^ au XX^e^ siècle, en mettant l'accent sur les instruments à cordes pincées et à archet. Il est en contrat post-doctoral à la Fondation Volkswagen « Recherche dans les musées », programme de recherche sur le développement de la harpe à pédales entre 1780 et 1830 à l'Institut de recherche pour l'histoire des sciences et de la technologie du Deutsches Museum de Munich.

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« A pleasure to the eye,
a revelation to the touch,
and a delight to the ear »
Danelectro catalogue, 1956

Despite its significant role in the shaping of modern popular music, the electric bass is arguably one of the most understated exponents in the history of electronic musical instruments. In contrast to the electric guitar or the keyboard synthesiser, on which scholarly research has focused over the last years,[1] the electric bass has remained in the shadow, even though it has been the backbone of most popular musical genres. Moreover, whereas recent publications have extensively investigated the development of a few iconic basses by famous brand names, such as Fender or Rickenbacker[2], relatively little has been written about companies offering mass-produced, cheap instruments on which thousands of teenagers cut their teeth in the 1950s and 1960s.[3]

Among them Danelectro certainly deserves a distinguished place. From the mid-1950s and throughout the 1960s this American company created several innovative instrument designs which became classic, gradually acquiring a legendary status among players and collectors. One such example is the *3412 Short Horn* electric bass, one of Danelectro's typical although less prominent models, introduced in 1958. Using

1 Waksman, Steve, *Instruments of Desire: The Electric Guitar and the Shaping of Musical Experience,* Cambridge, Harvard UP, 1999; Trevor Pinch and Frank Trocco. Analog Days: The Invention and Impact of the Moog Synthesizer, Cambridge (Mass.), Harvard UP, 2004.

2 Jim Roberts, *How the Fender Bass Changed the World,* San Francisco, Backbeat Books, 2001; Paul D. Boyer. *The Rickenbacker Electric Bass: 50 Years as Rock's Bottom,* Milwaukee, Hal Leonard Books, 2013.

3 This issue has been underlined in Hayato Sugimoto, "The Beatles' Gear and 'Fast Fashion': Collecting Inexpensive Guitars as a Symbol of Popular Culture in Modern Society", unpublished paper presented at the annual conference of the International Committee of Museums and Collections of Instruments and Music (CIMCIM) Presentation, Preservation, Interpretation – The Challenges of Musical Instrument Collections in the 21st Century", co-organized by various institutions in Basel and Bern, Switzerland, 22 to 25 February 2017.

this bass as a case study this article will present and analyse Danelectro's ground-breaking, and often unconventional, approach in the design and production of musical instruments, while providing a brief historical overview of the company. Additionally, the article will discuss how this instrument reflects the consumerist lifestyle of post-war America by pointing out previously unnoticed but important influences that various aspects of contemporary popular culture had on the musical instrument industry.

THE EARLY HISTORY OF THE ELECTRIC BASS GUITAR: FROM AUDIOVOX TO FENDER

Although several American companies, such as Vivi-Tone, Ro-Pat-In (later Rickenbacker), Vega, Regal, and Gibson had experimented with the idea of an electric bass already in the 1930s, when the first electric guitars were also being developed, they had all come up with conventional instruments which largely imitated the design and playing style of the acoustic upright bass, enjoying relatively limited success.[4] The earliest instrument which can be considered as the true predecessor of the modern electric bass is the Audiovox *Model 736 Bass Fiddle*, introduced in 1936 by Paul Tutmarc (1896-1972), a musician and musical instrument seller in Seattle.[5] The Audiovox *736* was a fretted solid body instrument of compact size designed to be played horizontally like a guitar and was offered with a matching amplifier, the Audiovox *Model 936*.[6] Nevertheless, probably due

4 Tony Bacon & Arian Sheets, "Electric bass guitar", *in* Laurence Libin (ed.), *The Grove Dictionary of Musical Instruments,* 2nd ed., New York, OUP, 2014, vol. 2, p. 143-144, at p. 143.

5 Peter Blecha, "Discovered! The World's First Electric Bass Guitar", *Vintage Guitar*, 1999, p. 80-82, online: https://www.vintageguitar.com/1916/audiovox-electronic-bass/, accessed 16 March 2017; *id.*, "Tutmarc, Paul (1896-1972), and his Audiovox Electric Guitars", online: http://www.historylink.org/File/7479, published 18 September 2005, accessed 16 March 2017.

6 Matthew W. Hill, "George Beauchamp and the Rise of the Electric Guitar up to 1939", PhD dissertation, Edinburgh, University of Edinburgh, 2013, p. 198-199. The author is grateful to Matthew W. Hill for sharing useful

to its high price at $65 (plus $75 for the amp), this pioneering instrument did not meet a wide acceptance; few of these basses were built and only a handful survives today.[7] The *Serenader* electric bass, an instrument similar to the Audiovox *736*, made by Tumarc's son, Bud, and distributed in 1948 by L. D. Heater Music Co.[8] equally failed to attract musicians and audiences alike.

The instrument that answered the needs of bass players for portability, ease of performance, more volume and better precision than the fretless and cumbersome acoustic bass did not appear until 1951. This was the Fender *Precision Bass*, a four-string bass guitar with a fretted neck bolted on a solid body, which paved the way for the future development of the electric bass.[9] Within a few years, largely because of the commercial success of Fender's *Precision Bass*, the electric bass was established as a new popular instrument which would play an important role in the shaping of modern music.[10] Consequently, several musical instrument manufacturers soon began producing their own models of electric basses. Among them was Danelectro, a company which became known for its ground-breaking, and often unconventional, approach in the design and production of musical instruments.

information on early electric guitars and for providing him with a copy of his dissertation.

7 Terry Burrows (ed.), *1001 Guitars to Dream of Playing Before You Die,* London, Cassell Illustrated, 2013, p. 113.

8 Tutmarc, Bud, "The True Facts on the Invention of the Electric Guitar and Electric Bass", online: http://tutmarc.tripod.com/paultutmarc.html, accessed 16 March 2017.

9 For more details on the development of the Precision Bass by Fender, see Roberts. How the Fender Bass Changed the World, San Francisco, Backbeat Books, 2001, p. 31-38.

10 The historical development and use of the electric bass during the second half of the twentieth century has been described in Bjørn Rasmunsen, Henrik. "El-bassen – understrøm til en udviklingshistorie"; Lisbet Torp (ed.), *Strøm, til!: En Udstilling om El-Guitarer og El-Basser,* Copenhagen, Musikhistorisk Museum and Carl Claudius Collection, 2001, p. 19-29. For the role of electric bass in popular music, see Per Elias Drabløs, *The Quest for the Melodic Electric Bass: From Jamerson to Spenner, Farnham*, Ashgate Publishing, 2015, p. 35-49.

NATHAN DANIEL AND THE DANELECTRO COMPANY

In order to understand the driving concept behind Danelectro's instruments it is necessary to provide a brief overview of the company's history and the profile of its founder, Nathan I. Daniel (1912-1994). Although it would become one of the biggest producers of electric instruments in the USA during the 1950s and 1960s, Danelectro (a contraction of "Daniel Electric") was initially established in 1947 by Daniel as an amplifier manufacturing business. Already from the mid-1930s Daniel had been the main supplier of amplifiers for various American companies, including Epiphone, an important guitar manufacturer, and later also to Sears, Roebuck & Co and Montgomery Ward, two major retail chains.[11]

However, possibly motivated by the growing popularity of the Fender and Gibson electric guitars which had appeared in the market in the early 1950s, Daniel started making his own electric guitars in 1954. As he characteristically mentioned "The Fenders and Les Pauls had come out, but the field was still wide open".[12] From that year and until its closure in 1969 the Danelectro factory, located first in Red Bank, New Jersey, and later, in 1959, a few miles away in Neptune, New Jersey, produced thousands of guitars and basses, as well as related equipment and accessories, either branded as Danelectro or sold under the Silvertone, Airline, and Coral names. These instruments were generally made in a fast and economical way, using inexpensive materials and radical construction methods, thus resulting in low-budget but quality products addressed mainly to a young amateur clientele. This corresponded to Daniel's original manufacturing philosophy, which was to produce above all affordable and reliable instruments without, however, compromising their sound and playability.[13]

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11 Eric M. Cale, "Danelectro", *in* Laurence Libin (ed.), *The Grove Dictionary of Musical* Instruments, 2nd ed., New York, OUP, 2014, vol. 2, p. 13-14, at p. 14.

12 Jim Washburn & Steve Soest, "Danelectro: Guitar Weirdness at A Price", *Guitar World,* July 1983, p. 45-50, online: http://www.jackaboutguitars.com/the-danelectro-story/, accessed 16 March 2017.

13 For a comprehensive overview of Danelectro instruments, see Doug Tulloch, *Neptune Bound: The Ultimate Danelectro Guitar Guide,* Anaheim Hills, Centerstream, 2008.

Like many other inventors and producers of electric instruments, Daniel was not trained as a musical instrument maker, but had begun his career as an electronics technician and manufacturer of radios and amplifiers. Paradoxically, Daniel played no instrument himself, while his favourite music was by classical composers, like Mendelssohn and Rimsky-Korsakov, rather than rock'n'roll, with which his instruments became associated with.[14] In many respects Daniel is comparable to Clarence Leonidas (Leo) Fender (1909-1991), another influential figure in the history of electric instruments. Fender had started his career as a maker and repairer of radios, amplifiers and PA systems in California, before turning his focus to the design and manufacture of electric guitars and basses.[15] Moreover, Fender's "preferred instrument was the saxophone",[16] and not the guitar, while, like Daniel, he allegedly "disliked rock'n'roll".[17] Paul Tutmarc, the inventor of the electric bass guitar, mentioned above, was also not fond of rock music, and although he was a competent musician, he was not a trained musical instrument maker.[18] These examples illustrate that the development of the electric guitar and bass was mainly driven, as has been suggested, by "engineers and tinkerers, rather than traditional luthiers".[19]

Daniel's experience with electronics and audio fidelity as well as his willingness to experiment with new concepts and techniques were crucial for the success of Danelectro instruments. Whereas other manufacturers were often "trapped" in the rather conservative traditions of the luthier's

14 Howard E. Daniel, "Tribute to Nathan I. Daniel, Founder of Danelectro", online: http://pen4rent.com/portfolio/tribute-to-nathan-i-daniel/, published 5 August 2007, revised 27 November 2010, accessed 16 March 2017. See also Tulloch, *ibid*., p. 24.

15 For more details on Fender, see Richard R. Smith, *Fender: The Sound Heard 'Round the World*, Fullerton, Garfish, 1995.

16 Tim Blanning, *The Triumph of Music: Composers, Musicians and their Audiences, 1700 to the Present*, London, Penguin Books, 2008, p. 225.

17 Matthew W. Hill, "George Beauchamp and the Rise of the Electric Guitar up to 1939", PhD dissertation, Edinburgh, University of Edinburgh, 2013, p. 226.

18 Peter Blecha, "Tutmarc, Paul (1896-1972), and his Audiovox Electric Guitars", online: http://www.historylink.org/File/7479, published 18 September 2005.

19 Matthew W. Hill, "George Beauchamp", art. cit., p. 35.

craft, due to his different training and background Daniel could think "outside the box", coming up with simple but ingenious problem-solving ideas.[20] Daniel observed, for instance, that "The thing that hammered companies like Epiphone was their desire to make an electric guitar sound like an acoustic instead of accepting the electric as a new instrument that is only similar to the acoustic guitar", adding that he "just analyzed what an electric guitar needed to be from an engineering point of view, then built it."[21] Similarly, Daniel, who is exceptional for using Masonite, a pulp composite, on his instruments, argued that the body of an electric guitar does not have a great impact on its sound, which was in direct opposition to the opinions of other guitar experts, such as Lester William Polsfuss (1915-2009), better known as Les Paul, who believed that electric guitars should be made of fine, costly woods, with a substantial body weight of high density for a clean sound and more sustain.[22]

On the other hand, recognising that the playability and intonation of electric guitars and basses greatly depend on the quality of their neck, fingerboard and bridge, Daniel paid great attention to the design and manufacture of these parts, sparing no expense. This is confirmed by the fact that Danelectro instruments typically have slender poplar necks reinforced internally with twin steel I-beams to prevent warping, while the fingerboard and bridge saddle are made of Brazilian rosewood, a durable hardwood that has been used by luthiers for centuries in the

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20 The multitalented personality of Daniel is exemplified by the fact that in 1978, almost a decade after the closure of Danelectro, he took a patent for a new type of ferry boat named *SuperOutrigger*. For more details see Howard E. Daniel, "Tribute to Nathan I. Daniel, Founder of Danelectro", online: http://pen4rent.com/portfolio/tribute-to-nathan-i-daniel/, published 5 August 2007, revised 27 November 2010; and also Doug Tulloch, *Neptune Bound: The Ultimate Danelectro Guitar Guide,* Anaheim Hills (Calif.), Centerstream, 2008, p. 27-28.

21 Jim Washburn & Steve Soest, "Danelectro: Guitar Weirdness at A Price", *Guitar World* (July 1983), p. 45-50, online: http://www.jackaboutguitars.com/the-danelectro-story/, accessed 16 March 2017.

22 Curtis W. Fisher, "The Father of the Silvertone Guitar", online: http://theapologist.blogspot.de/2005/02/father-of-silvertone-guitar.html, published 25 February 2005, accessed 7 November 2016; currently unavailable online.

making of stringed instruments because of its good acoustical properties. Daniel was reportedly assisted by John D'Angelico, a renowned maker of acoustic guitars with whom he was acquainted, in the determination of the scale length (the distance from the nut to the twelfth fret multiplied by two), the fret spacing, and the intonation on Danelectro instruments.[23] According to his son, Howard, Daniel "learned a lot at the beginning from John D'Angelico and Mario Maccaferri, one of whom [...] told him the [approximate] formula needed to determine the decreasing spacing between frets as you go up the fingerboard. With this rough formula in his mind, my dad spent an entire day at an old-fashioned, hand-cranked "adding machine" working through the math needed to determine the precise measurements."[24]

The low cost at which Danelectro was able to sell its products was related not only to the use of cheap materials but also to Daniel's manufacturing philosophy and the individual nature of the company's personnel. According to Howard Daniel "The 'secret' of Danelectro's manufacturing was that it neither hired nor required any professionals skilled in any type of instrument making. No luthiers. My dad hired ordinary job seekers, people of all ages, men and women, who usually had no more than a high school education, who were untrained/inexperienced in any of the processes used in the factory. To the best of my knowledge, all new hires were started at minimum wage. If they worked well and had good work habits and a positive attitude, they were very quickly given raises — usually after just one week at work — and they would continue to get raises as they continued to perform well. Those who, it became obvious, were not going to work out well were typically dismissed by the end of their first and only week at the factory. Those who stayed and advanced learned on the job – from their immediate supervisors and more experienced colleagues. The "secret" to being able

23 Jim Washburn & Steve Soest, "Danelectro: Guitar Weirdness at A Price", *Guitar World*, July 1983. For more details on D'Angelico see Paul W. Schmidt, *Acquired of the Angels: The Lives and Works of Master Guitar Makers John D'Angelico and James L. D'Aquisto,* Lanham & Kent, Scarecrow Press, 1998.

24 Personal communication with the author, 12 May 2016. The author is grateful to Howard Daniel for kindly sharing valuable information concerning the design and manufacture of Danelectro instruments.

to turn out quality products with the help of previously inexperienced, unskilled employees was my dad's manufacturing system, which broke down the making of both guitars and amplifiers into a number of tasks that did not require skilled employees to perform. If you could handle hand tools, an electric drill or saw or sander, a soldering iron, a glue brush, a paint spray gun, etc., you were qualified. Also, my dad designed and crafted a great many "jigs" that made it easy for employees to (for example) punch or drill holes in just the right place. This also simplified the manufacturing process and ensured that pretty much anyone, with a certain amount of on-the-job training, could do any of the jobs at the factory."[25]

Danelectro's zenith was in the early 1960s, when the company had a workforce of about five hundred people and sales that amounted to millions of dollars.[26] This is how Howard Daniel describes the operation of the Danelectro factory during this time:

> There were seven different "departments" – a woodshop, a spray-painting shop, a wiring area, a covering area, guitar final assembly, amplifier final assembly, and packing-and-shipping. The woodshop was where lumber, Masonite, particle board and Homasote (the latter two for amplifiers) were cut into a range of pieces required for guitars and amplifiers. Amplifier "boxes" were then assembled from these parts in the woodshop. The basic guitar bodies were also created here as blocks of wood were glued into place on one piece of Masonite, then had a second piece of Masonite glued on top, creating a sort of "sandwich." After a stack of such sandwiches had dried, these proto-guitar bodies would be shaped on a bandsaw, then sanded. [...] The spray-painting shop comprised two or three booths where guitars were painted. As I remember, the bodies and necks were painted separately. They were joined together in the final assembly area, which is also where the pickups and electronic components were installed. The wiring area consisted of a long row of booths where employees installed all the many separate electrical components (wires,

25 Personal communication with the author, 13 May 2016.

26 Jim Washburn & Steve Soest, "Danelectro: Guitar Weirdness at A Price", *Guitar World*, July 1983.

> resistors, capacitors, vacuum tubes, transformers) of the amplifiers onto the chassis. They also wired the electronic "guts" of the guitars here. Chassis were made from simple sheet metal, which was cut to size and bent into the shapes required for the different amplifier models. Before being sent to the wiring department, the chassis had holes punched in all the right places with the help of a jig. This was one of the jobs I did my first summer in the factory at age 14. The covering area was where the cloth covering was glued to the amplifier boxes and where the cloth strips were glued around the sides of the guitar bodies. Amplifier final assembly was where finished amplifier boxes had the loudspeakers and fully wired chassis installed. All products were tested before being packed and shipped. One final thing: At one end of the factory was a cluttered "laboratory", where my dad, with the help of a single permanent lab employee, would test new ideas.[27]

Regarding the supply of parts by external manufacturers Howard Daniel has mentioned that

> only the tuning pegs and "lipstick tubes" were outsourced until, at a certain point, he [his father] found the tuning pegs were sometimes defective, at which point he designed and began manufacturing his own, which were cold-rolled from a single piece of steel. The lipstick tubes he purchased from a manufacturer in New York City.[28]

Unfortunately, according to Howard Daniel, no archives of Danelectro have survived, which could provide a more complete insight in the company's organisation and function.

THE DEVELOPMENT OF THE FIRST DANELECTRO BASS

As described earlier, the earliest electric bass guitar had been introduced in 1936 by Paul Tutmarc, but it was only after the launch of the Fender *Precision Bass* in 1951 that a substantial demand for electric basses became

27 Personal communication with the author, 13 May 2016.
28 Personal communication with the author, 12 May 2016.

evident. Two more four-string basses were introduced in the early 1950s, the *K-162 Electronic Bass* by Kay (1952) and the *EB Electric Bass* by Gibson (1953). Daniel, who must have been aware of the increasing popularity of the electric bass during the early 1950s, joined the race in 1956 with a novel design. This was the first six-string electric bass, the *UB-2*, a single-cutaway, double-pickup instrument tuned an octave lower than a guitar. The *UB-2* had a scale length of 29 ½ inches (749 mm), which was longer than most common electric guitars (about 25 inches or 635 mm) but, like the Kay and Gibson basses mentioned above, considerably shorter than the Fender *Precision Bass* (34 inches or 863.5 mm). Regarding the manufacture of the *UB-2* Daniel stated that

> People started making bass guitars, and it was no big deal for us to switch from guitars to basses: we simply made the neck a bit longer. We started with a six-string bass because it's hardly any more trouble than a four-string and it gave the player something more for the same money. It took time for that to catch on, but if the player was capable he had more stuff to play with.[29]

Daniel's expectations were high as he thought that this bass "would appeal to guitarists, and to bass players; we were saying, look, here's two extra strings for free."[30] It has been additionally stated by Howard Daniel that his father's motivation in producing six-string basses was that "he couldn't understand why bass players would be satisfied with just the four conventional strings when it would be just as easy to add the two higher-tuned strings and provide a more versatile instrument" pointing out, however, that "it took a few years for him to accept that most bass players just weren't interested in a six-stringed instrument. So it was only later that he gave in and started producing basses in both four- and six-string configurations."[31] This change in Daniel's attitude is confirmed by the fact

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29 Tony Bacon & Barry Moorhouse, *The Bass Book: A Complete Illustrated History of Bass Guitars*, revised 2nd edition; New York, Backbeat, 2008, p. 20-21.

30 Jim Washburn & Steve Soest, "Danelectro: Guitar Weirdness at A Price", *Guitar World*, July 1983.

31 Personal communication with the author, 12 May 2016.

that the Danelectro catalogue from 1957 stated that the six-string *UB-2* "can be used as a 4 string bass by removing the 2 top strings."[32]

A year later, in 1957, Rickenbacker introduced the *Model 4000* electric bass, a four-string instrument with a scale length of 33.25 inches (844.5 mm). With is bold design and novel features, such as a neck-through-body construction, double metal adjusting truss rods in the neck, an adjustable bridge, and a deep "cutaway" shape which allowed comfortable access to the upper frets, the Rickenbacker *4000* was meant to threaten the domination of the Fender *Precision*.[33] When Daniel realised that the four-string was becoming a standard in the market, he reacted accordingly introducing a new bass design, though without entirely abandoning the six-string bass concept.[34] And so, in 1958 Danelectro presented its first four-string bass, the *Short Horn 3412* (**fig. 1**), hereafter referred to as Danelectro *3412*.

THE ORGANOLOGICAL FEATURES OF THE DANELECTRO 3412

The Danelectro *3412* belonged to the *Short Horn* series which was introduced around 1958, and was, in typical Danelectro fashion, a prime example of efficiency and economy. The most important features of the Danelectro *3412*, which was produced between 1958 and 1966, were summarised in the following description of the instrument, included in an advertising catalogue by Danelectro from 1959: "*SHORT HORN BASS*. Condensed design makes this new Bass same overall size as guitar. Economies effected by using our standard guitar parts brings the price of this Bass way, way down. Available in 4 or 6 string models, in bronze finish only".[35]

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32 Danelectro catalogue (1957) presented in Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 268.

33 For more details on the Rickenbacker *4000* bass, see Paul D. Boyer, *The Rickenbacker Electric Bass: 50 Years as Rock's Bottom*, Milwaukee, Hal Leonard Books, 2013, p. 8-15.

34 Willie G. Moseley, "Danelectro's Four-String Basses", *Vintage Guitar,* January 2014, online: https://www.vintageguitar.com/17777/danelectros-four-string-basses/, accessed 16 March 2017.

35 Similar descriptions appeared in various Danelectro catalogues from 1959 to 1965, presented in Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 274, 279, 287, 293.

1. Front and back views of the Danelectro *3412 Short Horn* bass. According to its serial number (4030), this instrument was made in 1960 in *Neptune*, New Jersey (author's collection)

This advertisement reveals Danelectro's ingenious manufacturing concept on which the design of Danelectro *3412* was based, essentially involving the use of the same parts for the basses as for the company's similar guitars. Thus, the materials and dimensions of the body and neck of the Danelectro *3412* bass were identical to the *Short Horn* guitar models produced by Danelectro. The main obvious difference between the *Short Horn* bass and guitar models was the repositioning of the bridge towards the bottom of the body in order to provide the longer scale length of 29 ¾ inches (755 mm) required for a bass instrument. In this way Danelectro could efficiently mass-produce two different instruments which had the same shape and size without any major alterations to its manufacturing procedures.[36] The *Short Horn* bass was also available in a six-string version (*3612*), which was identical to the four-string *3412* but was equipped with a six-string guitar bridge and nut, and six guitar tuners.

The Danelectro *3412* had a compact size, with an overall length of 980 mm, a body length of 445 mm, a maximum body width of 340 mm, and a body thickness of 44 mm. Like other *Short Horn* guitar and bass models, the Danelectro *3412* had an attractive form with a thin double cutaway body which offered several advantages from a performance viewpoint. The two symmetrical horns not only added to the visual elegance of the instruments, but also facilitated the easier access to the upper frets on both the bass and treble strings. In his remarks on the symmetry of the *Short Horn* design Howard Daniel maintained that "My dad found the standard cutaway design — which facilitated access to the higher reaches of the fingerboard only on the side of the treble-most strings — peculiar. He thought it would be more appealing to make the cutaways symmetrical. So he did."[37]

A symmetrical cutaway body was not rare on acoustic guitars and can be found on surviving guitars from the early nineteenth century.[38] However,

36 For an overview of the technical features of the Danelectro *3412*, see Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 111-116.

37 Personal communication with the author, 12 May 2016.

38 See, for instance, the guitars made by Eduard Lieves of Königsberg in Ulrich Wedemeier, *Gitarre-Zister-Laute: Sammlung Historischer Zupfinstrumente*,

Danelectro's *Long Horn* and *Short Horn* basses, both introduced in 1958, were two of the earliest electric stringed instruments to feature a symmetrical body cutaway, which was later widely adopted by other companies, such as Gibson, Epiphone, or Gretsch. Howard Daniel recalled that the *Short Horn* design "was introduced at about the same time as the longhorn design, used for long-necked basses and for the guitarlin (which enabled musicians to play far up the neck, into the mandolin range)", further mentioning that "the longhorn idea [...] came first, as my dad wanted to make it easy for players to reach well up the fingerboard. That led to the deep cutaways, which left the long 'horns'. From there, it was an easy mental leap to the shorthorn for shorter-necked instruments. And it also appealed to my dad as an improvement on the single cutaway.[39]"

Regarding its construction, like most instruments of the *Short Horn* series, the body of Danelectro *3412* typically consisted of a poplar frame covered on the front and back with a 5 mm layer of Masonite, a common hardboard material made from woodchips that Danelectro had begun using on instruments around the mid-1950s. The early version of Danelectro *3412* had a "Solid Centre" construction with a wooden block between the neck and the bridge for "sustained tone and absence of feedback",[40] a feature that was abandoned in 1960.[41] According to the 1959 catalogue the various body parts were joined together with resin glue, "the new scientific formula glue that never varies, never fails."[42]

A four-way adjustable chrome-plated brass bridge, which could be moved "up, down, forward and back",[43] was fixed with three screws on the lower part of the body, while the bridge saddle, a sound-determining part, was made of Brazilian rosewood, like the fingerboard, as will be

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Hannover, Wedemeier, 2012, p. 36-37, and in Conny Restle & Christopher Li (eds.), *Faszination Gitarre*, Berlin, Nikolai, 2010, p. 123.

39 Personal communication with the author, 12 May 2016.

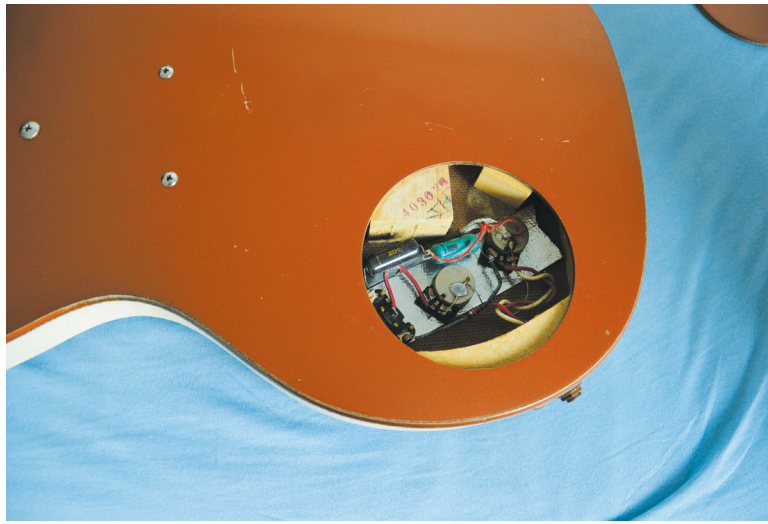
40 Danelectro catalogue (1957) presented in Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 273.

41 Jim Washburn & Steve Soest, "Danelectro: Guitar Weirdness at A Price", *Guitar World*, July 1983.

42 Danelectro catalogue (1957) presented in Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 273.

43 *Ibid.*

described below. Originally, the Danelectro *3412* had a "kidney" – or "bean"-shaped pickguard made of transparent plastic with a white vinyl underlay fixed with two screws on the soundboard. Two "cupcake"-shaped knobs made of white plastic controlled the volume and tone, while a three-way metal toggle switch changed the timbre, cutting off the bass or treble frequencies. These controls initially were rear-mounted and accessible through a round cavity cover on the back (**fig. 2**), but after 1960 they were mounted on a white "seal"-shaped Masonite pickguard on the front of the instrument.



2. The round control cavity on the back of the Danelectro *3142* bass shown here with the cover removed (author's collection). Note the serial number "4030" stamped on the wooden block above the electronics, according to which the bass was finished on the 40th week (October) of 1960. After 1960 the controls were mounted on a white "seal"-shaped Masonite pickguard on the front of the instrument

The jack input was originally fixed on a stainless steel plate on the lower body edge, whereas after 1960 it was also mounted on the Masonite pickguard together with the controls. Two plastic (on later models metal) strap buttons were fixed on the bottom of the body and on the neck heel. A significant cost-cutting factor of the Danelectro *3412* design was that it was available in only one finish, being simply painted on the body and neck

in a bronze tint, and thus avoiding the laborious coatings and varnishes employed by guitars manufacturers of a more traditional style, such as Epiphone and Gibson. The decoration of Danelectro *3412* was also sparse: for example, instead of intricate inlays and purflings the poplar sides were simply covered with white Naugahyde, a type of plastic commonly found in seat covering and upholstery.[44]

The poplar neck of the Danelectro *3412* had the same materials and dimensions to the guitar neck used on the company's *Short Horn* guitar models. However, the longer scale of the Danelectro *3412* implicated that its fingerboard could effectively accommodate only 15 frets, contrary to the narrower 21 frets fitted on the fingerboard of the *Short Horn* guitar models. The bolt-on neck design of Danelectro *3412*, whereby the neck was fixed to the body with three screws, was most likely influenced by Fender instruments which Daniel must have known. However, in contrast to Fender and other manufacturers who used adjustable truss rods, the neck of Danelectro *3412* utilised Daniel's "Never-Warp" system with two steel I-beams inside the neck to prevent the bending and twisting of the neck wood under string tension and changes in humidity and temperature. The system was non-adjustable because according to Danelectro "it never needs adjusting"[45] and, as a proof of this statement, Danelectro necks have generally a good reputation against warping. From 1963 Danelectro used a neck-tilt adjustment system, later adopted also by Fender, which enabled the lowering or increasing of the action (the clearance between the strings and the fingerboard) with an Allen screw.[46]

The fingerboard of Danelectro *3412*, like most Danelectro instruments, was made of Brazilian rosewood, having an almost flat profile with a radius of 17 inches (431 mm)[47] and a length of 453 mm. As mentioned above, the fingerboard, which was joined to the body at the thirteenth fret, had

44 William H. Young & Nancy K. Young, *The 1950s [American Popular Culture Through History Series]*, Westport & London, Greenwood Press, 2004, p. 78.

45 Danelectro catalogue (1959) presented in Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 274.

46 Jim Washburn & Steve Soest, "Danelectro: Guitar Weirdness at A Price", *Guitar World*, July 1983.

47 *Ibid.*

15 wide frets with force-fitted plastic inlayed dots on the face and edge of fingerboard, on frets 3, 5, 7, 9, 12, and 15 (with double dots on fret 12). According to the 1959 catalogue the frets were "precisely inserted by special machinery designed and built by Danelectro."[48] Like other Danelectro instruments, the Danelectro *3412* had a screw-mounted nut with a width of 41 mm made of aluminium, probably due to its availability and durability, adding perhaps to the "twangy" sound of the bass. The headstock had a distinctive "Coke bottle" outline with four open-back "Ideal" tuners with plastic buttons, same as those used on Danelectro's guitars, two on each side of the headstock (later models had Skate key tuners), and was adorned with a vertical silkscreened "DANELECTRO" logo.

The Danelectro *3412* was equipped with a single-coil "lipstick tube" pickup placed diagonally towards the neck and tightened with two screws on the back. Its name owes to the fact that the metal pickup covers were made from chrome-plated lipstick tube casings purchased from a local cosmetics packing company on Long Island.[49] From 1955 this distinctive pickup became a standard feature for all production instruments built by Danelectro regardless of the instrument type (guitar, bass, lap-steel, etc.). According to 1956 catalogue the split-shell pickup design was meant to prevent the loss of high frequencies.[50] Like on other Danelectro instruments, from the early 1960s (probably c.1962) the controls of Danelectro *3412* were typically wrapped in copper and paper shielding material to reduce electronic interference from neon lights, flashers, electric motors, etc. in the instruments' circuit, and thus eliminate humming, while the pickup itself was shielded by the metal lipstick cover. This feature was declared on a small rectangular label bearing the inscription "DANELECTRO / TOTALLY SHIELDED" pasted on the headstock just above the nut.

48 Danelectro catalogue (1959) presented in Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 273.

49 Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 23 and Jim Washburn and Steve Soest, *op. cit.*

50 Danelectro catalogue (1956) presented in Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 263.

Only right-handed models of the Danelectro *3412* and other *Short Horn* models were available, thus saving the trouble of making alternative moulds and further bringing down the production expenses. However, the symmetrical double cutaway of the body also allowed left-handed musicians to play such instruments by simply reversing the string arrangement, with the bass strings on the treble side and vice versa, and with only minor necessary adjustments to the bridge and nut. Although obstructing the access to the volume and tone controls, which were partly covered by the player's left arm, this practice must have not been uncommon, as demonstrated by a young Jimi (James Marshall) Hendrix (1942-1970) playing a *Short Horn* Danelectro guitar upside down in a photograph from the late 1950s.[51] Ironically, Danelectro is reported to have "built only one left handed instrument in its entire production, a Coral Electric Sitar for guitarist Jimi Hendrix".[52] Moreover, the round body shape of the Danelectro *3412* with its deeply curved waist allowed the instrument to be played comfortably in both sitting and standing positions.

Danelectro's economical design and manufacture reduced the production costs drastically, making the Danelectro *3412* a quite affordable instrument. The 1959 catalogue price of both the four-string (*3412*) and the six-string (*3612*) models of the instrument was $85.[53] As a result the Danelectro *3412* was almost three times cheaper than the Rickenbacker *4000 bass*, which when launched in 1957 cost $279.50, or the Fender

51 This photograph has been reproduced in Michael Heatley & Harry Shapiro, *Jimi Hendrix Gear: The Guitars, Amps & Effects That Revolutionized Rock 'n' Roll,* Minneapolis, Voyageur Press, 2009, p. 27, as well as in Peter Blecha, "Hendrix, Jimi (1942-1970)" (available online at http://www.historylink.org/File/2498, published 15 August 2011, accessed 16 March 2017). Similar photos of Hendrix with this guitar, nicknamed "Betty Jean", have survived from his years in the army.

52 Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 179. This instrument is also discussed in King, Rick. "The One Thing That Didn't Get Away: The Hendrix One of a Kind Coral Electric Sitar", *Collectible Guitar: Then and Now,* 1/4, 2014, p. 14-15 (available online at https://issuu.com/collectibleguitar/docs/cg-julaug14-issuu, accessed 16 March 2017).

53 Danelectro catalogue (1959) presented in Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 274.

Precision Bass, whose retail price that year was $219.50.[54] Likewise, the Fender *Jazz Bass*, introduced in 1960, was listed at $279.50 for a sunburst-finish model and $293.47 for a blonde or custom-colour finish in Fender's catalogues from 1961.[55]

But apart from its attractive price, the Danelectro *3412* had several advantages from an ergonomic and musical perspective. Due to its unique body construction described earlier the Danelectro *3412* was essentially a hollow body instrument with a characteristic resonance due to the large body cavities, which contributed to its idiosyncratic tone. In addition, it was very light particularly when compared to the solid body basses offered by other companies. For example, the average weight of a Danelectro *3412* is 2.5 kg, whereas that of a Rickenbacker *4000* or Fender *Precision Bass* is about 4 kg. This fact, combined with its overall dimensions and balanced outline, made it a very practical and portable instrument. Besides, the short scale length, convenient shape and condensed size of the instrument was appealing for beginners and players with small hands, while, at the same time, rendering the instrument ideal for guitar players who occasionally had to switch to bass in order to increase their professional opportunities.[56] Even though it lacked the deep bass growl and more refined tone of long-scale basses, the Danelectro *3412* had a distinctive mid-range, punchy sound which, especially when played with a pick and muted at the bridge with the right hand, could cut through in recordings or live performances.

THE AESTHETICS OF DANELECTRO AND ITS CONNECTIONS TO 1950S POPULAR CULTURE

The demand for electric musical instruments in post-war America coincided with the emergence of a popular youth culture, which was promoted and documented through magazines, comic books, television

54 Tony Bacon & Barry Moorhouse, *op. cit.*, p. 24.

55 *Ibid.*, p. 37.

56 Willie G. Moseley, "Danelectro's Four-String Basses", *Vintage Guitar* (January 2014) (available online at https://www.vintageguitar.com/17777/danelectros-four-string-basses/).

programmes, films, and, last but not least, rock'n'roll music.[57] As already mentioned, Danelectro products were targeted primarily at young customers and their design should thus correspond to their needs and tastes. Although Daniel occasionally collaborated with other people, such as the session guitarist Vinnie Bell (born Vincent Gambella, 1935), for devising new instruments, Howard Daniel has stated that his father "was responsible for all the designs and innovations at Danelectro".[58]

As a prolific manufacturer of amplifiers and electric instruments Daniel was certainly well informed about the latest developments in this field and must have been accordingly influenced by the work of other makers, at least on a technical level. Howard Daniel has mentioned that "I don't know whether my dad knew any of his competitors personally, although I suspect he may have met some of them at the annual NAMM [National Association of Music Merchants] show".[59] But in order to investigate Daniel's aesthetic influences and potential sources of inspiration for the design of the Danelectro *3412* and similar guitar and bass models, one has to look deeper into the sociocultural background in which these instruments were developed.

Nothing symbolises the 1950s better than the car.[60] An icon of affluence and consumerism, the car in America gradually became "a prestige commodity to possess with pride, rather than just a service to use", with the luxurious cars of the 1950s acting as "a manifestation of America's new-found 'super-power' status and worldly confidence".[61] During the 1950s the automobile industry had penetrated the music business so

57 For more details on the development of popular culture in post-war America, see Ashby LeRoy, "The Rising of Popular Culture: A Historiographical Sketch", *Organisation of American Historians Magazine of History,* 24/2, 2010, p. 11-14.

58 Personal communication with the author, 12 May 2016.

59 Personal communication with the author, 12 May 2016.

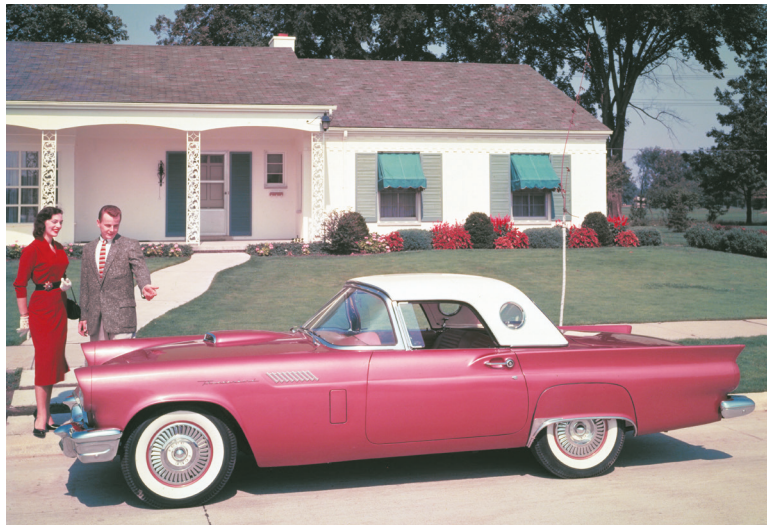
60 For a thorough discussion of the car's image in 1950s lifestyle, see Karal Ann Marling, As Seen on TV: *The Visual Culture of Everyday Life in the 1950s,* Cambridge, Massachusetts, Harvard UP, 1996, p. 128-163.

61 Nigel Whiteley, "Toward a Throw-Away Culture. Consumerism, 'Style Obsolescence' and Cultural Theory in the 1950s and 1960s", *Oxford Art Journal*, vol. 10, n° 2, 1987, p. 3-27, at p. 6.

much that many songs, and even bands, were named after popular car models.[62] It has been suggested that during this era the car embodied "an accurate image [...] of post-war value immortalised in chrome and steel"[63] which had a profound impact on the design of other consumer goods, including musical instruments. This is evident, for instance, by the fact that early electric guitars and basses displayed an abundance of nickel or chrome parts, just like the fast sport cars of the 1950s. Additionally, in the late 1950s several manufacturers started to coat their electric guitars and basses in cheap, but colourful, car paints, as an alternative to costly and time-consuming wood varnishes. For example, the practice of applying DuPont's "Duco" car paints on instruments, introduced by Fender in 1956, was later imitated by other major companies. Many of these shiny metallic coatings which became popular in the late 1950s and early 1960s resembled the flashy exteriors of cars and motorbikes, making them instantly familiar among teenagers and young adults.

Some of these so-called "custom" colours used by Fender, such as Fiesta Red or Lake Placid Blue, had been actually used on car models, the first on the Ford *Thunderbird*, the second on the Cadillac *Brougham*.[64] In the case of the Danelectro *3412*, the metallic bronze finish with contrasting white parts may have also been a direct influence from the automobile industry, since in 1957 the Ford *Thunderbird*, a sport car introduced in the mid-1950s, was available in bronze with white interior (**fig. 3**). By 1958 almost three quarters of American families owned a car,[65] so linking the appearance of a new instrument to a fashionable vehicle, like the Ford *Thunderbird*, seemed a quite sensible choice for Danelectro. Furthermore, the vertical logo on the headstock of the Danelectro *3412* (**fig. 4**, middle) resembled the signs located at petrol stations, tyre shops, motels and diners which grew parallel with car travel during the 1950s.

62 William H. Young & K. Nancy, *op. cit.*, p. 30.
63 Nigel Whiteley, *op. cit.*, p. 3-27, at p. 6.
64 Tony Bacon & Barry Moorhouse, *op. cit.*, p. 36-37.
65 William H. Young & K. Nancy, *op. cit.*, p. 247.



3. Detail of the bronze and white finish on the body of the Danelectro *3412* (top, author's collection) and a photograph showing the 1957 *Thunderbird* in bronze finish with white interior (bottom, © Ford Motor Company Archives, reproduced by permission)

Apart from Danelectro, the influence of automobiles can be detected on electric guitars and basses by other manufacturers. Alone the fact that Leo Fender has been described as "the Henry Ford of the electric guitar"[66] shows that electric pickups and car motors went hand-in-hand. The connection between guitars and cars in the 1950s is further exemplified by the fact the *Combo* guitar models launched by Rickenbacker in the mid-1950s featured on their headstock a distinctive logo whose "interlinked characters recall contemporary automobile logos that were designed as one continuous strip of chrome."[67] Furthermore, in the early 1960s the renowned car designer Raymond H. Dietrich (1894-1980) was employed by Gibson in order to create new attractive instruments. Dietrich, who had previously worked for the car manufacturers Chrysler, Checker

66 Tim Blanning, *The Triumph of Music: Composers, Musicians and their Audiences, 1700 to the Present,* London, Penguin Books, 2008, p. 227.

67 Tony Bacon & Paul Day, *op. cit.*, p. 20.

4. Details of the Masonite and white Naugahyde used on the body of the Danelectro *3412*, as well the striking "kidney"-shaped pickguard (left); the distinctive "Coke bottle" headstock (middle); and the "cupcake"-shaped control knobs (right) of the Danelectro *3412* (author's collection)

and Lincoln,[68] developed two futuristic-looking models, the *Firebird* guitar and the *Thunderbird* bass, both of which were inspired from the tailfins (and the names) of popular contemporary cars.[69] Besides, the concept of convertible cars found an equivalent in certain guitar models marketed as "convertible", such as those by Gretsch or Danelectro, which offered both acoustic and electric options, or by Rickenbacker, which allowed for six-string and twelve-string combinations.

Another industrial sector that epitomises the 1950s is that of interior design. The 1950s witnessed a revolution in housing and furniture mainly due to the development and use of new synthetic materials. Many advertisements and images from this era illustrate households with colourful, mass-produced furniture in a broad variety of forms and sizes. Therefore, the use of materials typically found in low-cost furniture, such as Masonite or Naugahyde, on the *3412* bass and other Danelectro instruments should come as no surprise. For example, Masonite had the advantage of being an inexpensive, sturdy material readily available in sheets which could be easily cut in any desired shape and size. Daniel himself stated that he chose Masonite because "it was consistent, it was stable, it worked and it was awfully damn cheap."[70] Besides, the use of epoxy resin, which became widely available in the 1950s,[71] for joining the body parts is another evidence of Daniel's wholehearted embrace of new synthetic materials in the manufacture of musical instruments and of his experimentation with new concepts outside of traditional instrument-making. Moreover, it is noteworthy that the early version of Danelectro's *3412* had a pickguard whose "kidney" or "bean" shape was commonly found in 1950s furniture, such as tables and sofas (**fig. 4**, left).

68 Terry Burrows (ed.). *1001 Guitars to Dream of Playing Before You Die,* London, Cassell Illustrated, 2013, p. 301.

69 Tony Bacon & Barry Moorhouse, *op. cit.*, p. 56.

70 Jim Washburn & Steve Soest, *op. cit.*

71 For more details on epoxy resins, see Gannon, John A. "History and Development of Epoxy Resins", in Raymond B. Seymour & Gerald S. Kirshenbaum (eds.). *High Performance Polymers: Their Origin and Development: Proceedings of the Symposium on the History of High Performance Polymers at the American Chemical Society Meeting held in New York,* April 15-18, 1986, New York, Elsevier, p. 299-307.

The 1950s also saw the rise of fast food, with prepared meals and soft drinks becoming a staple in the diet of young Americans. One of the most striking features of the Danelectro *3412* is the headstock, whose outline became known as the "Coke bottle" headstock, as it resembled the shape of the Coca-Cola bottle, a universally recognisable trademark (fig. 4, middle). It is perhaps no coincidence that in 1957, one year before the launch of Danelectro's *Short Horn* series which featured the "Coke bottle" headstock, a new Coca-Cola bottle had been marketed, on which white lettering replaced the *traditional embossing* of the familiar logo. Additionally, the "cupcake"-shaped volume and tone control knobs of Danelectro *3412* are reminiscent of cupcakes, a popular sweet of the 1950s usually made in the then newly introduced Tupperware, another original product found in 1950s kitchens (**fig. 4**, right).

An area which was marked by rapid progress during the 1950s was that of telecommunication and electronics. It is perhaps a minor detail that the Danelectro *3412* had a quarter-inch (6.35 mm) jack input, now a typical feature of most electric guitars and basses. However, it has been suggested that "the use of quarter-inch phone jack (the name comes from the fact that this type of connector was typically used in telephone switchboards and that the shaft of the plug was a quarter inch in diameter) seems so obvious to modern musicians that is hardly deserving of note, but the very ubiquity of the quarter-inch phone jack is significant in that there is no electrical or mechanical reason why this should be so."[72] It has been further pointed out that "since its first use of the Rickenbacker '*Frying Pan*', the quarter-inch phone jack has become the world standard for connecting electronic musical instruments to amplifiers".[73]

It is also remarkable that an article in *Popular Electronics*, a magazine for electronics hobbyists, from December 1957 showed a young girl holding not a Fender or a Gibson, but a Danelectro guitar.[74] As novel products,

72 Matthew W. Hill, *op. cit.*, p. 98.

73 *Ibid.*, p. 99.

74 Frank H. Tooker, "Build your own Vibrato", *Popular Electronics, vol.* 7, n° 6 (1957), p. 41-45, at p. 41. The same image was used on the magazine's cover (available online at http://www.americanradiohistory.com/Archive-Poptronics/50s/57/Pop-1957-12.pdf, accessed 16 March 2017).

electric guitars and basses absorbed every possible influence from related industries and it is no exaggeration to suggest that even electronic household devices used for cleaning, cooking and home entertainment had an effect on musical instrument design.[75] For instance, Danelectro's double-pickup guitars and basses had concentric volume and tone controls which were referred to in the 1956 Danelectro catalogue as "television-type controls".[76] Moreover, Rickenbacker's *Capri* guitars, introduced in the late 1950s, were equiped with large knobs which "looked equally at home on kitchen stoves of the period"[77] and became known as "cooker" knobs. The headstocks on instruments by Kay from 1957 to 1960 featured a plastic overlay known as the "Kelvinator" logo because of its similarity to those found on Kelvinator refrigerators.[78] It is also worth mentioning that in the mid-1960s Rickenbacker produced the *Astro Kit* guitar, a guitar that could be assembled from a kit, which aimed to satisfy the contemporary "do-it-yourself" ethic.[79]

During the 1950s women became major consumers, leading to the steady rise of products addressed to female clients, particularly in fashion and cosmetics. Although the main byers of electric guitars and basses were male, it can be claimed that Danelectro instruments demonstrated an affinity to female culture due to their distinctive "lipstick tube" pickups. The tubes used for these pickups on the Danelectro *3412* and other models are similar to those used on lipsticks by Hazel Bishop (1906-1998),

75 This topic has been analysed in Poulopoulos Panagiotis. "Where Ruckers Meets Rickenbacker: The Challenges of 'Opening' Musical Instrument Collections to a Wider Public", unpublished paper presented at the panel session "Museums as Instigators-Museums as Educators" during the annual conference of CIMCIM *Collectors at Music Museums-Reasons & Means,* co-organized by various museums in Stockholm, Turku, Copenhagen and Trondheim, 24 to 31 August 2014.

76 Danelectro catalogue (1956) presented in Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 263.

77 Tony Bacon & Paul Day, *op. cit.*, p. 25.

78 Willie G. Moseley, "Kay Jazz Special and Value Leader", *Vintage Guitar* (April 2014) (available online at https://www.vintageguitar.com/19013/kay-jazz-special-and-value-leader/, accessed 16 March 2017).

79 Terry Burrows (ed.), *op. cit.*, p. 312.

5. The "lipstick tube" pickup of the Danelectro *3412* (left, author's collection) and a contemporary advertisement for the "No-Smear" (1952) lipstick by Hazel Bishop showing similar tubes as those used on Danelectro instruments (right, Media History Digital Library, reproduced by permission)

a chemist who in the late 1940s had invented a long-lasting, non-smearing lipstick.[80] Bishop's revolutionary "lasting" lipstick – also referred to as "kissproof" – was supported by an extensive advertising campaign in newspapers, television and radio, which made it a commercially successful product marketed at young American women (**fig. 5**). Interestingly, in 1954 Bishop had acquired a plant in Paramus, New Jersey, about an hour away from the Danelectro factory, so it is not impossible that the two companies purchased their lipstick tubes from the same supplier.

80 William H. Young & K. Nancy, *op. cit.*, p. 88. For more details on Bishop, see Ann T. Keene, "Bishop, Hazel (1906-1998), cosmetics executive" (available at http://www.anb.org/view/10.1093/anb/9780198606697.001.0001/anb-9780198606697-e-1002299, American National Biography Online, published April 2010, accessed 7 November 2016). For Bishop's contribution to the American cosmetics industry, see Riordan, Teresa. *Inventing Beauty: A History of the Innovations that Have Made Us Beautiful,* New York, Broadway Books, 2004.

In addition, the "cupcake" knobs used on Danelectro *3412*, mentioned earlier, allude to the "cupcake" dress, which referred to a very glamorous 1950s gown which had a tiny waist and a large voluminous skirt resembling a ballerina's tutu, providing an additional connection between Danelectro instruments and contemporary female fashion.

CONCLUSIONS

The history of Danelectro is synonymous with innovative and economical manufacture using unorthodox materials and methods, a fact which has contributed to the lasting appeal of its instruments. Commenting on Daniel's designs his son, Howard, has stated : "In Danelectro's heyday, his guitars and amplifiers were often criticized for the inexpensive materials that went into their manufacture. But my dad knew he was right and dismissed the critics as 'not very smart'."[81] Indeed, many of Danelectro's competitors would have strongly disagreed when Daniel claimed that his instruments were "a pleasure to the eye, a revelation to the touch, and a delight to the ear" and that they encompassed "more original ideas [...] than in any other instruments in the entire history of the guitar".[82] However, as a proof of Daniel's radical approach, numerous world-known artists are known to have owned and played Danelectro instruments, either as beginners or later in their career as professional musicians. Due to their unique sound and distinctive looks, vintage Danelectro instruments are still used in diverse music styles, with their monetary, historical, and emotional values constantly increasing among musicians and collectors.

The Danelectro *3412* discussed in this article is a characteristic example of the company's philosophy of offering quality products at a low price. Like most Danelectro instruments, it comprised cheap but durable new materials that were widely available in the 1950s, such as composite wood or plastic, and which were easy to manufacture and assemble in large quantities using purpose-made machinery and jigs instead of skilled

81 Personal communication with the author, 12 May 2016.

82 Danelectro catalogue (1956) presented in Doug Tulloch, *Neptune Bound*, *op. cit.*, p. 262.

handwork. In addition, it was built using the same parts as those used on Danelectro's *Short Horn* guitars and was available only in one colour, thus reducing the overall production costs considerably. Additionally, simple but inventive features such as the "Never-Warp" neck, the "Solid Centre" body construction, or the "Totally Shielded" pickups minimised problems often encountered on electric guitars and basses. Moreover, as shown in this article, many visual aspects of Danelectro *3412* subconsciously evoke images of 1950s popular culture, ranging from sport cars, trendy furniture, and household appliances, to fast food and female cosmetics.

In the 1950s the design and manufacture of electric guitars and basses by American companies were influenced as much by traditional instrument-making processes as by the booming of the automobile industry and the rise of transport, by advances in chemical, electrical and acoustical engineering, by the establishment of new powerful mass media such as radio and television, as well as by myriad other aspects of popular lifestyle, particularly new styles of entertainment and fashion. In his comments on how Danelectro instruments reflect the 1950s popular lifestyle, Howard Daniel has pointed out that "Like anyone who lived in that era, my dad was exposed to all these influences." Finally, this article has demonstrated that by shifting scholarly attention to previously ignored musical instruments from the 1950s, arguably the golden age in the development of the electric guitar and bass, we can achieve a new interpretation and contextualisation not only of modern music history, but also of the popular culture of this fascinating era.

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KEYWORDS

Electric bass, popular culture, consumerist lifestyle, 1950s, automobile industry, synthetic materials, telecommunication, interior design, cosmetics, fashion, Danelectro, Audiovox, Fender, Rickenbacker, Gibson

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