Bellacode: localized textual interfaces for live coding music

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ABSTRACT

In May 2018, the collective RGGTRN presented a series of live coding workshops focused on the development of localized mini live coding languages, targeting the underlying affordances of TidalCycles via the Estuary web-based environment. This paper recounts the experience of those workshops, including interpretation of the live coding esolangs La Calle and Sucixxx created during the workshops. This paper ends with a brief analysis of an anonymous survey deployed during the workshops and a brief discussion of future work. On the basis of this account, we suggest localization as an aspect to be further explored in live coding practice.

1 INTRODUCTION

In May 2018, the collective RGGTRN presented a series of live coding workshops focused on the development of localized live coding esolangs, targeting the underlying affordances of TidalCycles (McLean 2014) via the Estuary web-based environment (Ogborn, et al. 2017). These workshops happened in Bogotá (Colombia) at the Real-Time festival, Manizales (Colombia) at the 17th Image festival, Medellín (Colombia) at festival ART, Lima (Perú) at Telefonica Foundation, and Quito (Ecuador) at the MediaLab UIO. During these workshops, we (i.e. the members of RGGTRN[1]) encouraged participants to develop live coding languages using the logic of their mother tongue. Participants also mentioned the need for mainstream languages to support their local language(s) — Spanish in this case. Furthermore, the idea of having a lingua franca of software, live coding, and electronic music seemed to be problematic to some of the participants in the workshops. This paper recounts the experience of those workshops.

The second section of this paper provides a context and a motivation for both the workshops and this paper. The third section is a description of how using slang and feminist reggaeton became part of the design of the live coding languages La Calle and Sucixxx, respectively. This paper ends with a brief analysis of an anonymous survey deployed during the workshops and a brief discussion of future work.

2 CONTEXT AND MOTIVATION

The workshops series described in this paper happened in the context of RGGTRN's 2018 "Bellacode Tour" throughout Colombia, Perú, and Ecuador. This tour was sponsored by the

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1 RGGTRN is Emilio Ocelotl, Jessica Rodriguez, Marianne Teixido, and Luis Navarro. Web: https://rggtrn.github.io/

Ibermúsicas Fund[2] and involved participants from inside and outside the collective. These workshops were motivated by 1) Luis Navarro's ongoing PhD research at McMaster University regarding the development of culturally situated platforms for live coding music; and 2) Emilio Ocelotl and Marianne Teixido's interest in finding and recognizing communities of live coders in Latin America.

The workshops series was named "Parserx_ lenguajes vivos para el performance sonoro-visual" [Parserx_ live languages for audio-visual performance]. The word parserx is a pun made of the computational word parser and the Colombian slang parcera(o). A parser is a program that analyzes strings in order to translate them into something else, such as another language. Parcera(o) is used to approach someone in a friendly way as it often means "friend" or "buddy". The workshops were open to the general public, eighteen-years-old and above. Each workshop lasted six hours, divided over two days wherein participants were encouraged to develop their own audio and video live coding esolangs, as well as to reflect on natural languages through a follow-up survey.

This paper focuses on the audio live coding "half" of the workshops, where Estuary and TidalCycles were principal tools. Estuary (Ogborn et al. 2017) is a collaborative web-based live coding environment built on top of the live coding language TidalCycles (McLean 2014). The affordances Estuary provides enabled participants to 1) work immediately in the browser rather than installing software; 2) test and play with their developed languages, either solo or in a collaborative setting; and 3) wrap their custom languages around TidalCycles functions and the WebDirt sampling engine (Ogborn & Beverley 2016) optimized for live coding music on the web browser. In each city, participants were invited to perform with their languages in an Algorave happening the day after each workshop was finalized. A performance video showing live coding languages developed at the Bogotá workshop is available here: https://youtu.be/YctJ9SckzCU.

3 DEVELOPING LOCALIZED TEXTUAL INTERFACES FOR LIVE CODING MUSIC

A common activity in the live coding community is developing original languages/interfaces. Some of them are domain-specific, built on top of general-purpose computer languages. Examples include Fluxus (McLean, Griffiths, Collins & Wiggins 2010), built on top of Scheme, TidalCycles (McLean 2014), built on top of Haskell, and Sonic Pi (Aaron & Blackwell 2013), built on top of Ruby. Other languages/interfaces are built on top of languages that are already specialized for sound/music, like Ixi Lang (Magnusson 2010) and the Threnoscope (Magnusson, 2015), both built on top of SuperCollider. In some other cases a new language/interface may be deemed *personalized* as it is developed for the use of a sole user/artist. Examples include *Cacharpo* (Del Angel & Ogborn 2017), *Daem0n* (Ogborn 2013), and the *Autocousmatic* (Collins 2009), among many others. Esoteric languages, or "esolangs", such as the well known Brainfuck (Brainfuck 2018) deploy alternative and often opaque programming notations in order to highlight the expressive possibilities of computer programming. However, this latter category is rarely seen in a live coding context.

During the workshops, we looked to further proliferate distinctions (Coleman 2013) by

2 http://www.ibermusicas.org/

encouraging participants to design **localized live coding esolangs** (fig. 1). Here, participants had the option to "adapt, translate, and customize" TidalCycles sample files, functions, and their labels, to their "specific locale" or culture in order to make them more "meaningful and comprehensible" to them (Souphavanh & Karoonboonyanan 2005, 1). We position the resulting languages within the category of esolangs as their purpose is to live code music and to appreciate a code particular to a determinate group of people. From the fifteen custom esolangs produced, this paper will focus on two examples, chosen for the way they point to a practical exploration of natural language, slang, and experience within the participants' individual communities.
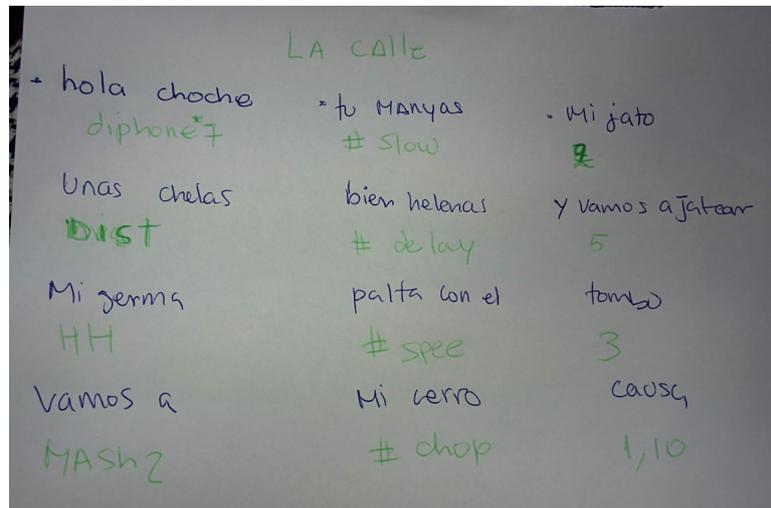

Figure 1. A draft of "La Calle" language

3.1 Slang and musical patterns with *La Calle*

La Calle [The Street] is a mini live coding esolang developed in Lima (Peru) by workshop participant Ivanka Cotrina, using slang characteristic of that city's working-class neighbourhoods. According to Ivanka, "the street is the place where new codes of language are created" and where meaning is domesticated[3] (Del Angel, personal communication, September 2018). Ivanka sees slang as "an alternative way of communication that delineates territories, meaning, that one can connect [with others] through a rhetoric that is accepted [in that territory] despite not being grounded on cultured language" [4].

Ivanka was interested in demonstrating, in a playful way, that this marginal code is not inherently countercultural but rather is just another form of communication helping people to manifest themselves and be heard. Figure 2 shows three columns with sets of words that can be concatenated in various ways to form meaningful patterns of phrases and sounds. Table 1 shows a transcription of Lima's slang phrases, their meaning in Spanish, English, and their translation to TidalCycles functions.

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3 "La, lleca o calle es el lugar donde se crean los nuevos códigos del lenguaje popular, en la urbe de una capital. lugar donde la migración del mercado ha negociado reconocerse así y domesticar significados desde lo marginal hasta lo emergente."
4 "… la jerga es una alternativa de comunicación que incluso delimita territorios eso quiere decir que podemos conectarnos a través de una retórica que es aceptada a pesar de ser un lenguaje no culto y pertenecer suburbio contra cultural ellas mantienen un nexo en el tiempo hasta extinguirse y eso es lo que más me importo al evidenciarlas."

La Calle dictionary	Meaning in Spanish	Meaning in English	Meaning in TidalCycles
hola choche	hola amigo	hi friend	"diphone"
unas chelas	unas cervezas	some beers	"dist"
mi germa	mi novia	my girlfriend	"hh"
vamos a	ir algun lugar	go to a place	"mash2"
bien helenas	bien helada (fría)	frozen/very cold	#delay
tu manyas	tú conoces	you know	#slow
palta con el	que vergüenza	what a shame	#speed
mi cerro	mi barrio (lugar de la periferia)	my neighborhood (a peripheral place)	#chop
mi jato	mi casa	my home	7
y vamos a jatear	y vamos a descansar	and let's rest	5
tombo	el policía	the police	3
causa	amigazo/amigaza del alma (chocheraza)	brotherly/sisterly friend (more significant than a choche)	1,10

Table 1. A transcription of La Calle's phrases, their meaning in Spanish, English, and their translation to TidalCycles functions.

The syntax of *La Calle* is similar to that of TidalCycles (fig. 2). It is read from left to right, with the expressions inside quote marks representing sounds, the expressions outside the quotes in the middle of the sentence representing a sound transformation (e.g. an effect), and the remaining expressions representing numbers.

Figure 2. The same sound pattern represented in *La Calle* and TidalCycles.

3.2 *Sucixxx*, transfeminism, and reggaeton music

Sucixxx is another mini live coding esolang, developed in Quito (Ecuador) by workshop participants Chakala, Maria Juana, Carolina Velasco, and Daniela Moreno, borrowing ideas from transfeminism (Koyama 2003) and reggaeton music. Reggaeton, as a genre, is often associated with the misogyny and gender violence referenced in both the lyrics and the visual representations of the music videos. In reggaeton, it is assumed that women are the object of desire and that by leaning back to the man during the dance (i.e., "perrear" or twerking) they are being marginalized and objectified. However, the latter proposition obviates how women might also desire and enjoy dancing this way. While twerking is

strongly erotic, its purpose is not always sexual. That is, when a woman chooses to twerk someone, it does not mean, necessarily, she wants to have sex with that person. It is the appropriation of one's body and the pleasure it can generate when dancing what matters in this case (Pagola 2017).

Chakala and Carolina explain that the three "x" in "Sucixxx" have different meanings. They reference the post-porn movement, representing a recognition of "new ways of expressing pleasure and visualizing desire"[5] (Del Angel & Teixido, personal communication, September 2018). "xxx" also represents "death, censorship, and pornography".[6] Thirdly, the "Suci" in "Sucixxx" makes reference to the Spanish adjective "sucio/sucia", which translates to "dirty, muddy, filthy, with stains, impure, unclear, out of the law".[7] In this sense, the "x" highlights the binary element of Spanish where often the last letter of a word makes reference to either a woman (e.g. Sucia) or a man (e.g. Sucio). By substituting this letter with an "x" the binary disappears (e.g. Sucix)[8].

Reggaeton music has recently experienced an increase of number in women singers (e.g. Ivy Queen, Tomasa del Real, and Ms Nina, BadGyal). The lyrics from these singers often seem as misogynistic as the ones sung by their male counterparts. However, the fact that those who sing are women, expressing sexual desire from their own perspective, potentially unsettles a reading of straightforward misogyny. According to Chakala, the phrases used in Sucixxx are "a reappropriation of [mysoginist] insults". Carolina asserts that their response to this language, which "historically has been used for controlling and judging women",

> "is not a "search for 'respect', or about being seen different, nor about being valued for 'how we really are', on the contrary, it is about assuming control over our own desires, our ways of living our body, and so, we take over this language".[9]

The creators of Sucixxx have known each other for a long time. They mention, they are DJs and performers who share an interest in "hacking, partying, and twerking".[10] The words and phrases utilized in their language make reference to different aspects of reggaeton music. That is song names, band names, pleasure, sexual desire, and body movement (Table 2). The phrases "gata fiera", "mala mujer" and "tu sicaria" are names of reggaeton songs. Carolina remarks that, in addition to referencing reggaeton songs, their language Sucixxx also references their own "interventions and readings" on "how they approach music".

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5 "Las XXX tambien son parte importante del nombre porque nos sentimos identificadas con las nuevas maneras de expresar el placer y visibilizar el deseo y con lo posporno."
6 "… también tiene las tres x de la muerte, de la censura, y de la pornografía."
7 "citare a la RAE… sucio, cia. Del lat. *succĭdus* 'jugoso', 'mugriento'. 1. adj. Que tiene manchas o impurezas. 2. adj. Que se ensucia fácilmente. 3. adj. Que produce suciedad. Ese perro es muy sucio. 4. adj. Deshonesto u obsceno en acciones o palabras. 5. adj. Dicho de un color: Oscurecido, falto de su claridad natural. 6. adj. Con daño, infección, imperfección o impureza. Lazareto sucio. Viento sucio. Labor sucia. 7. adj. Contrario a la legalidad o a la ética. Trabajo, negocio sucio. Guerra sucia. 8. adv. Sin la debida observancia de las reglas y leyes propias del juego al practicarlo."
8 "También es sucixxx con la x que evita la "o" y la "a"."
9 "… justamente estas canciones usan un lenguaje que históricamente ha sido utilizado para controlar y juzgar a las mujeres. Pero nuestra respuesta no es una supuesta búsqueda del "respeto", o de ser vistas distinto, o de que nos aprecien por "cómo somos realmente", sino al contrario asuminos nuestros deseos, nuestras maneras de vivir nuestro cuerpo, y tomamos este mismo lenguaje."
10 "Todas las cuerpas que formamos el grupo vivimos de prender fiestas es decir somos djs emergentes,artistas performers; venimos de escuelas musicales diferentes por así decirlo pero en nuestro andar nos ha unido el hack, la fiesta y el perreo…"

Sucixxx dictionary	Meaning in English	Meaning in TidalCycles
putita	little whore	sound
perrita	bitch	sound
tu sicaria	your sicaria (the name of a reggaeton song)	sound
mala mujer	bad woman (the name of a reggaeton song)	sound
amorfada	amorphous	sound
gata fiera	fierce cat (the name of a reggaeton song)	sound
torta golosa	the name of a lesbian reggaeton band	sound
feminasty	feminasty	sound
comeme	eat me	fire
dame	give to me	bass:2
azotame	whip me	808:2
rompeme	break me	gabba
barre el piso	sweep the floor	notes
interpelame	interpellate me	casio
encadename	chaining me	metal
aborta	have a miscarriage	arpy
suave	soft	#slow
suave suavecito	soft, very soft	#slow 2
duro	hard	#fast
más más	more more	#fast 2
con lengua	with tongue	#striate
con el pelo	with the hair	#chop
bb	babe	#reverb
con flow	with flow	#rev

Table 2. A transcription of Sucixx's phrases, their meaning in English, and their translation to TidalCycles functions.

Sucixxx is read from left to right where the expressions before the dash are initializers that

do not translate into anything, the expressions immediately after the dash represent the names of sound samples, and the remaining expressions represent a pattern transformation.
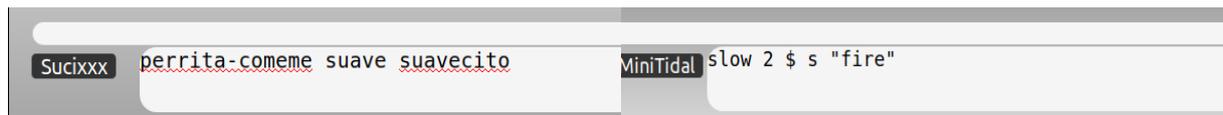
Figure 3. The same sound pattern represented in *Sucixxx* and TidalCycles.

4 SURVEYING THE USER EXPERIENCE AND FUTURE WORK

During our trip to South America, an optional online survey was made available to participants to complete. This survey assessed user experience when utilizing computer languages as a means of music creation. Its aim was to identify opinion about potential language constraints benefitting or harming the learning and use of these languages. The response rate to the survey was low (n=6). All participants answering the survey were Spanish speakers of more than eighteen years of age. Table 3 shows their responses.

Id	Q1. How would you describe your gender?	Q2. What is your age?	Q3. Besides Spanish, what other languages do you know?	Q4. Briefly describe any training in music and/or programming?	Q5. Describe ways in which language has affected your engagement with programming, including but not limited to the language used during the workshop.	Q6. What, if any, features would you like to see in the programming languages available for making music?
1	male	between 41-50	English	ActionScript 2.0, Processing, P5.js, Coffeescript.	I don't have any problems with English.	SuperCollider and music theory for programmers.
2	prefer not to answer	between 41-50	English	Workshops: 'live coding y los patrones de la música', Parserx, Creación de lenguajes de programación vivos para el performance sonoro', 'Poesía sonora y código', 'texto como interface para la creación sonora en SuperCollider', 'Síntesis y manipulación de audio en Pd (Pure Data)'.	For me it is an advantage that most of the information is in English because I learned that language when I was 5 years old and since then I use it and practice it. The biggest use I make of this language is to get information from the web and to watch video tutorials also on the web.	I would like to see the difference between two executions of code. That there was a view or a deployment similar to the one that exists in the merging or merging software of text files between, at least, the last two versions of the code that is being executed. This is meant to help those who do not understand the program or have not fully understood it by highlighting the differences.
3	female	between 26-30	I read English	Undergrad in Music.	Language is an element that sometimes discourages learning, since many of the programming documents are in languages other than one's native language, and that makes the process difficult or slow. However, at the same time, this is a stimulus to learn another language.	I am interested in sound creation, synthesis, and sound design.
4	male	between 18-25	English	Empirical learner of dance music (EDM).	Limitation, since I do not speak English fluently.	The possibility for the generation of more complex patterns within the already available ones.
5	male	between 51-60	A little bit of English	I am a programmer and systems analyst, web developer and audio technician.	I speak Spanish and I have not had any problems with that, although there is a lot of material in English that is not a problem for me	It is always good [to have] a good manual, not so extensive. It should be practical. But it seems that now, manuals are a scarce commodity in any

					either. The workshop that was taught in Spanish was not a problem for me.	programming language whatsoever.
6	male	between 30-35	English	Technician and self-taught person.	no response	Programming languages are suitable for any person, however the music is only based on samplers and experimentation (without rules). New rules should be encouraged (melodies, scales, arrangements, bars, sounds) so that the music created by algorithms is recognizable at first listen.

Table 3. Responses to the survey deployed in addition to the workshops (translated from Spanish).

The survey results do suggest that participants related knowing English with learning a programming language. More than half of the participants were comfortable with learning a computer language through manuals, video tutorials and workshops in English. The rest, mention that finding these information often in English limits and discourages their learning as they are not fluent in that language. The survey's low sample size prevents much in the way of conclusions. However, the fact that survey respondents offered complex opinions on the relationship between (natural) language and (musical) programming languages suggests that there is much to be explored in the area of localized live coding esolangs. Alongside the development of further localized esolangs, future work may include a more widespread survey deployment within the global live coding community and the analysis of existing localized live coding esolangs. We would like the latter to be informed by the Cognitive Dimensions framework (Green & Petre 1996) as referenced in computer language design (Blackwell, 2003), interface design (Blackwell & Green 2003) and live coding practice (Blackwell 2015; McLean & Wiggins 2011).

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David Ogborn (aka dktr0): Hacker, composer, artist programmer, live coding and guitar performer; lead developer of numerous software projects used in network music and live coding, including EspGrid, extramuros, and Estuary; director of the Cybernetic Orchestra, the Networked Imagination Laboratory, and the Centre for Networked Media and Performance (CNMAP) at McMaster University; Associate professor in McMaster's Department of Communication Studies and Multimedia, teaching in the undergraduate Multimedia program, the MA in Communication and New Media, and the PhD in Communication, New Media, and Cultural Studies.

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