



# Sing as One

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# A Major Problem

Music has long been part of Christian worship.  
The Church has never been so large,  
and the music never so rich.

'Doing together' builds 'empathy', which produces unity, camaraderie, and even helps heal (some) psychological disorders.

But not knowing the rhythm or pitch, 75% of Christians instead feel negative & counter emotions.

"When you can't sing along because you don't know the notes or rhythms, how do you feel?"

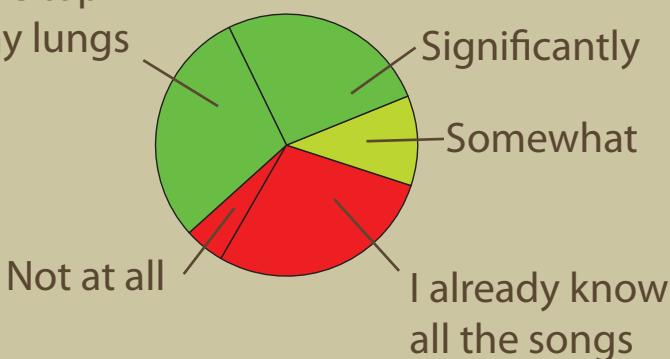


“Their mouths are moving, but there’s no sound coming out. They don’t want anyone to know they don’t know the song. And everyone thinks he’s the only one not singing.”

Only 25% know “all the songs”, another 70% would sing if they knew the song.

“If... you knew the notes and rhythms you haven’t been singing, how likely are you to increase participation in musical worship?”

At the top  
of my lungs



Most churches only show lyrics, and most Christians couldn’t read Baroque Music Notation (BMN, a.k.a. ‘sheet music’) even if it were shown.

But they can play GuitarHero,  
so there has to be a better way...

# BMN is part of the problem

## Icons to Memorize

Musicians must memorize a dozen unique non-intuitive icons to represent rhythm alone

ovals, stems, filled ovals, wind-blown flags  
flags with no wind, dots, hats, squiggles,  
rotated stretched parenthesis,  
upside-down hats, half an eye,  
circles connected to tilted-stems by flags

All that simply to mark when to start and when to stop. That's not good UX.

## Lists to Memorize

While there are also icons to memorize for pitch, like the gothic Gs “”, gothic F “”, # and ♯, the worse problem is the lists.

Musicians must memorize and frequently recall the half-step intervals of a major scale: 2-2-1-2-2-2-1, which are drawn in entirely different staff locations depending on the clef.

And all that changes on every line, where a new key signature must be memorized.



## Redundancy

In BMN, many concepts can be achieved in multiple ways each, so musicians have to learn multiple ways of doing the same thing.

A note's duration can be extended by a dot or by a “tie”. A musician must learn both.

Triplets can be indicated either by a square bracket with a “3”, or by compound time. That just confuses viewers.

And by the way, those “extend the duration by half” dots look exactly like the “cut the duration by half” dots.

## Double Negative

BMN sometimes makes up for the redundant information by leaving other information out entirely. Many hymnals include multiple lyric lines in a song, but neglect the repeat symbols.

Unable to change their layout once downloaded, ‘sheet music’ .pdf’s can’t communicate the changes inserted by worship leaders. Causing it to fail at its primary purpose: unambiguously communicating when to sing what.

# BMN is part of the problem

## Perfectly Useless

The vast majority of people do not have perfect pitch. But they can generally kind of carry a tune. That's called "relative pitch".

Notating music for instruments in perfect pitch makes sense. An E♭ on a trombone is always played in 3rd position, regardless of the key.

But perfect pitch for untrained singers makes no sense at all. Almost no one can correctly do what it says, even if they successfully read it.

Good user experience emphasizes what most users will use, and deemphasizes what only advanced users need.

## Hocus Focus

The center of the human retina is called the "fovea". It's only 5 degrees wide. Outside, the sharpness of our vision falls off rapidly.

The average person can't focus on the 4th line of the lyrics and see the melody at the same time, if they even *have* hymnals.

## Setting the Mood

I don't believe in distracting psychedelic background videos or 1984-style wall-sized faces, but I do believe in setting the mood with artwork.

But BMN is stuck in black on white with Baroque styling, and provides no internal contrast to separate from the background art.

A new notation should not only guarantee legible contrast, but also be 'themable' to look at home with background artwork.

## Advanced Mental Math

To calculate the duration of a note with flags, the musician must count the flags, then use them as a negative exponent of the number 2, then multiply by a beat, and further divide based on any non-base-4 time signature

Negative exponents...  
that's pretty advanced math.  
Yet musicians must do it  
several times per second.

What if I told you the way to "fix" BMN was to throw it out entirely?

# New Opportunities

## A Million Million

Modern technology can change 8 million points of light to 16 million colors, 60 times per second. Drawing a notation with ink on paper is no longer a necessary constraint.

Motion and color are cues to people as they interact with the physical world.

## The Font Size is a Lie

In slide show software, the font size has nothing to do with how readable the content will be to a person an arbitrary distance away.

I've already released an app that can find exactly what size the font needs to be so the people at the back of the room can read it.

Now combine that with dynamic layout of the music and background images and video, and we make an entirely new generation of notation.

But a new notation will have more than just a font, the entire rendering of the notation needs to take legibility & distance into account.

# Lessons in Doing it Right

## Its Vision is Based on Movement

Humans can see greater detail when focussing on a non-moving image.

But motion attracts our attention.

By carefully crafting both motion and non-motion, a new notation can be legible & intuitive.

## Too Much Information

When the human eye finds a “pattern” it filters the information it sends to the brain.

Only a single element of the pattern and the pattern’s extent is sent to the brain, making it hard to count all the elements.

The threshold varies from person to person,  
3-5 repeating elements trigger the filter,  
placing the BMN musical staff at the  
extremity of human perception

Representing 12 values per octave without triggering the repetition filter is a challenge, but I’ve solved it.

# Lessons in Doing it Right

## Funny Pictures of Cats

Cats can play with iPads because Apple uses “direct interaction” to harness the “visual cortex”, the part of the brain that analyzes physics.

The use of “indirect” interfaces, like desktops and laptops, requires the “prefrontal cortex”, which does “highly-focused thinking”.

By harnessing the visual cortex, the person “sees” the notes and rhythm, the prefrontal cortex is freed to do something else, like contemplate the meaning of the lyrics.

## Designed for the user

I've seen those junior-high-aged volunteers' wandering attention miss a slide transition, then suddenly not even the band can sing.

To reduce the severity of the consequences of easy & frequent mistakes, I had to ditch the concept of “slides” and “pages”.

They can barely type in lyrics for new songs, so I know they're not going to be able to type out the musical notation in pro apps like Finale.  
**The music data has to download ready for use.**

# Let's Fix This

## We Have the Technology

If the idea of re-inventing music notation sounded crazy when you first opened this pamphlet, I hope you realize now it's actually necessary and doable.

I have a solution, but my lawyers won't let me show it to you here without an NDA. In user-testing, worship leaders are already loving it.

And I wrote its app to import MusicXML files, which is an industry-standard format that

~~the church  
worship leaders~~

supports the app's features. So ~~I need~~s SongSelect to export MusicXML files of lead sheets instead of just .pdf's (which are just pictures of BMN).

## Moving forward

I know SongSelect uses NoteFlight.

I know NoteFlight can export MusicXML.

The last link in the chain is to convince you to give worship leaders the content they need to start leading the congregation to sing as one.

If you want to know more, visit [singasone.com](http://singasone.com), or call me. (334) 332-2469

# Let's Enable the Church to 'Sing as One'

Worship leaders have 2 bad options for projecting:  
Baroque Music Notation (BMN) or lyrics-only.  
Neither conveys the rhythms or pitches to  
musically-untrained congregations.

Unsure of the rhythms and pitches, their hands  
go in their pockets, they mumble, and they do  
not develop empathy with each other from  
the shared action. Instead, they mostly feel  
left out, embarrassed, frustrated, and sad.

So I re-invented music notation... from scratch...

## About the Inventor

9 years experience as a musician  
Honor bands, All-State, Drum-Major.  
His church-organist grandmother  
began teaching him piano at 4 yo.

9 years experience as an  
iPhone app developer  
specializes in solving unsolved problems  
and creating novel user interfaces  
Did I mention my Ph.D. in  
Aerospace Engineering?

The perfect mix of training and creativity