Ginti Number Compositions
By Jerry Leake

A *ginti* (lit. "counting") is a North Indian composition constructed using numbers, typically in a series from 1–9, or 9–1. Ginti are based on mathematical principles of reducing or enlarging a number series until the number 1 or 9 lands back on beat 1 of the rhythm cycle called "sam" (pronounced "sum").

An example of a reducing series from 9 to 1 is:

987654321
87654321
7654321
654321
54321
4321
321
21
1

Ginti are useful for training one's sense of time, and are typically heard during a kathak dance performance. In the dance, which often unfolds spontaneously between the featured artist and tabla player, ginti provide an exciting and challenging forum for performers to exchange recited and performed repertoire.

In one format, the dancer recites a ginti with kriya gestures (clap and wave hand motions, explained below) with the tabla player storing the pattern into memory. Once the ginti ends on sam (perhaps spanning many cycles), the tabla player recalls the ginti and improvises drum strokes that coincide with the number series. The reverse format also exists whereby the drummer recites a ginti, challenging the dancer's recollection and skills. Ginti can occur in many rhythm cycles, but are predominantly heard in 16-beat tintal.

Kriya Gestures / Tintal

When reciting the ginti that follow it is necessary to maintain the flow of the cycle with hand motions, and to speak the tintal syllables (called "bols") before and after each ginti. In this manner tintal provides the accompanying "groove" with ginti presented as featured compositions.

Kriya means "movement" and refers to the use of the hands to conduct musical time with clap and wave gestures. 16-beat tintal is divided into four groups of four beats each (like a 4-bar phrase) with gestures occurring at the beginning of each group/bar. "Tintal" literally translates to "three claps"—

tin = 3, tala = clap. These claps correspond to the open bass tones from the low “bayan” drum of the tabla.

Shown below are three symbols “+ 2 3” that correspond to the 3 claps. The plus marks the beginning of the cycle with the first and most prominent clap (+ = 1). Within these clapped groupings the tabla strokes “dha” and “dhin” feature bass tones from the bayan. The outward wave of the hand indicated with “o” at the third line marks the khali portion of the cycle. This is where bass tones drop out. “Khali” literally means “empty.”

Shown below is one tintal cycle that is repeated indefinitely. Notice that the form of the cycle takes on a kind of AABA song format. AABA letters appear at the end of each line to highlight this quality.

Refer to the accompanying video to see how the kriya gestures and tintal syllables are combined into a flowing sequence. Cycle tintal syllables with “clap clap wave clap” gestures. These fundamental elements set the stage for the ginti that follow.

clap	+	dha	dhin	dhin	dha	A
clap	2	dha	dhin	dhin	dha	A
wave	o	dha	tin	tin	ta	B
clap	3	ta	dhin	dhin	dha	A

Ginti Models

Ginti are built using recurring patterns of development, making it possible for one to be learned and recalled on the spot—as long as the underlying pattern is identified as the ginti evolves. Shown below is a simple one-cycle ginti that ascends from 1–9 then back to 1.

Begin by speaking the tintal cycle with kriya gestures. After the ginti ends resume the tintal syllables, as shown below.

Ex. 1

+	dha	dhin	dhin	dha
2	dha	dhin	dhin	dha
o	dha	tin	tin	ta
3	ta	dhin	dhin	dha
+	**1**	**2**	**3**	**4**
2	**5**	**6**	**7**	**8**
o	**9**	**8**	**7**	**6**
3	**5**	**4**	**3**	**2**
+	**1**	dhin	dhin	dha
2	dha	dhin	dhin	dha
o	dha	tin	tin	ta
3	ta	dhin	dhin	dha – etc…

A variation results by starting on 9 and ending on 9. Begin and end all the ginti that follow with tintal.

Ex. 2

+	**9**	**8**	**7**	**6**
2	**5**	**4**	**3**	**2**
o	**1**	**2**	**3**	**4**
3	**5**	**6**	**7**	**8**
+	**9**			

Beginning from a different number will always return it to its starting point.

Ex. 3

+	**4**	**5**	**6**	**7**
2	**8**	**9**	**8**	**7**
o	**6**	**5**	**4**	**3**
3	**2**	**1**	**2**	**3**
+	**4**			

Kids' Ginti

World-renowned kathak dancer Pandit Chitresh Das composed several basic ginti for his younger students. I teach these using 5 different languages to explore different perspectives on how they can be learned and applied. The languages are:

1. English numbers: 1–5
   one, two, three, four, five
2. Hindi numbers: 1–5
   ek, do, tin, char, panch
3. S. Indian drum syllables: 3–5
   3 = ta ki ta, 4 = ta ka di mi, 5 = ta di ki na tom
4. Western Solfege: 1–5
   do, re, mi, fa, so
5. Hindi Solfege: 1–5
   sa, re, ga, ma, pa

As shown below, the first two cycles repeat a basic 1–4 series of numbers. The third cycle brings in the 5 series—1 2 3 4 5—with a gap at the end. The last cycle contains no gap for a continuous 5. The ginti ends on 5 at the start of the 5th cycle. The four other languages of this ginti follow the same model. Always begin and end with tintal.

English numbers:

+	**1**	**2**	**3**	**–**

2	**1**	**2**	**3**	**–**
o	**1**	**2**	**3**	**4**
3	**1**	**2**	**3**	**4**
+	**1**	**2**	**3**	**–**
2	**1**	**2**	**3**	**–**
o	**1**	**2**	**3**	**4**
3	**1**	**2**	**3**	**4**
+	**1**	**2**	**3**	**4**
2	**5**	**–**	**1**	**2**
o	**3**	**4**	**5**	**–**
3	**1**	**2**	**3**	**4**
+	**5**	**–**	**1**	**2**
2	**3**	**4**	**5**	**1**
o	**2**	**3**	**4**	**5**
3	**1**	**2**	**3**	**4**
+	**5**			

Hindi numbers:

+	ek	do	tin	–
2	ek	do	tin	–
o	ek	do	tin	char
3	ek	do	tin	char
+	ek	do	tin	–
2	ek	do	tin	–
o	ek	do	tin	char
3	ek	do	tin	char
+	ek	do	tin	char
2	panch	–	ek	do
o	tin	char	panch	–
3	ek	do	tin	char
+	panch	–	ek	do
2	tin	char	panch	ek
o	do	tin	char	panch
3	ek	do	tin	char
+	panch			

Drum syllables:

+	ta	ki	ta	–
2	ta	ki	ta	–
o	ta	ka	di	mi
3	ta	ka	di	mi
+	ta	ki	ta	–
2	ta	ki	ta	–
o	ta	ka	di	mi
3	ta	ka	di	mi

+	ta	di	ki	na
2	tom	–	ta	di
o	ki	na	tom	–
3	ta	di	ki	na
+	tom	–	ta	di
2	ki	na	tom	ta
o	di	ki	na	tom
3	ta	di	ki	na
+	tom			

Western solfege:

+	do	re	mi	–
2	do	re	mi	–
o	do	re	mi	fa
3	do	re	mi	fa
+	do	re	mi	–
2	do	re	mi	–
o	do	re	mi	fa
3	do	re	mi	fa
+	do	re	mi	fa
2	so	–	do	re
o	mi	fa	so	–
3	do	re	mi	fa
+	so	–	do	re
2	mi	fa	so	do
o	re	mi	fa	so
3	do	re	mi	fa
+	so			

Hindi solfege:

+	sa	re	ga	–
2	sa	re	ga	–
o	sa	re	ga	ma
3	sa	re	ga	ma
+	sa	re	ga	–
2	sa	re	ga	–
o	sa	re	ga	ma
3	sa	re	ga	ma
+	sa	re	ga	ma
2	pa	–	sa	re
o	ga	ma	pa	–
3	sa	re	ga	ma
+	pa	–	sa	re

2	ga	ma	pa	sa
o	re	ga	ma	pa
3	sa	re	ga	ma
+	pa			

Refer to the video link to learn a variation on this ginti.

Ginti Compositions (adult versions)

Ethnomusicologist and colleague George Ruckert, Ustad Ali Akbar Khan's senior disciple on sarod, composed the ginti that follow. The pattern of the first ginti is made clear early on as 9 descends to 1, back up to 8 then down to 1, back up to 7, etc. This 4-cycle ginti is like a bouncing ball with progressively smaller bounces as it nears the end. Start and end with tintal.

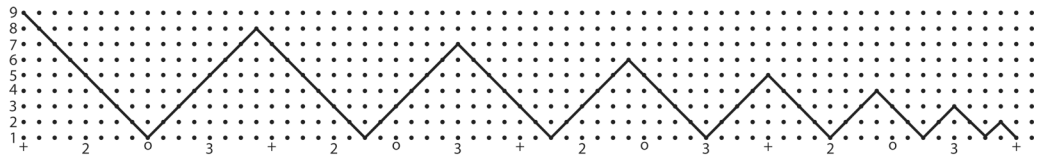
Ginti 1

+	**9**	**8**	**7**	**6**
2	**5**	**4**	**3**	**2**
o	**1**	**2**	**3**	**4**
3	**5**	**6**	**7**	**8**
+	**7**	**6**	**5**	**4**
2	**3**	**2**	**1**	**2**
o	**3**	**4**	**5**	**6**
3	**7**	**6**	**5**	**4**
+	**3**	**2**	**1**	**2**
2	**3**	**4**	**5**	**6**
o	**5**	**4**	**3**	**2**
3	**1**	**2**	**3**	**4**
+	**5**	**4**	**3**	**2**
2	**1**	**2**	**3**	**4**
o	**3**	**2**	**1**	**2**
3	**3**	**2**	**1**	**2**
+	**1**			

Ginti Graphs

Ginti can be represented in a graph to visually illustrate their structural pattern. As shown below, recited numbers appear on the vertical axis, and kriya gestures with the symbols + 2 o 3 appear on the horizontal axis. In graph form, the previous ginti reveals the "bouncing ball" effect:

Ginti 1 graph

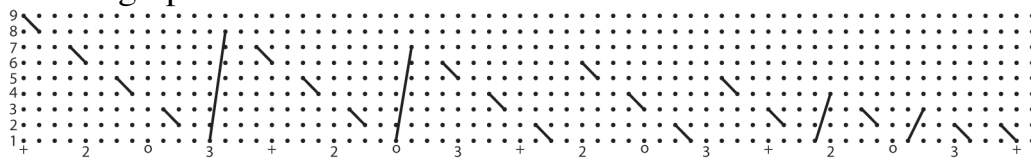


Ginti 2

This 4-cycle ginti flows in continuous groups of 3, with two numbers followed by a gap (9 8 –). The numbers develop from 9–1, then 8–1, 7–1, etc. Start and end with tintal.

+	**9**	**8**	**–**	**7**
2	**6**	**–**	**5**	**4**
o	**–**	**3**	**2**	**–**
3	**1**	**8**	**–**	**7**
+	**6**	**–**	**5**	**4**
2	**–**	**3**	**2**	**–**
o	**1**	**7**	**–**	**6**
3	**5**	**–**	**4**	**3**
+	**–**	**2**	**1**	**–**
2	**6**	**5**	**–**	**4**
o	**3**	**–**	**2**	**1**
3	**–**	**5**	**4**	**–**
+	**3**	**2**	**–**	**1**
2	**4**	**–**	**3**	**2**
o	**–**	**1**	**3**	**–**
3	**2**	**1**	**–**	**2**
+	**1**			

Ginti 2 graph



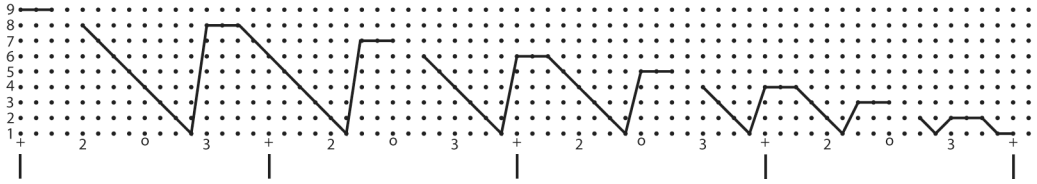
Ginti 3

This 4-cycle ginti repeats the top number three times before descending to 1 and reducing the entire series. Notice that the odd numbers (999, 777, 555, 333) include a gap. The even numbers (888, 666, 444, 222) do not have gaps. Start and end with tintal.

+	**9**	**9**	**9**	**–**
2	**8**	**7**	**6**	**5**
o	**4**	**3**	**2**	**1**
3	**8**	**8**	**8**	**7**

+	**6**	**5**	**4**	**3**
2	**2**	**1**	**7**	**7**
o	**7**	**–**	**6**	**5**
3	**4**	**3**	**2**	**1**
+	**6**	**6**	**6**	**5**
2	**4**	**3**	**2**	**1**
o	**5**	**5**	**5**	**–**
3	**4**	**3**	**2**	**1**
+	**4**	**4**	**4**	**3**
2	**2**	**1**	**3**	**3**
o	**3**	**–**	**2**	**1**
3	**2**	**2**	**2**	**1**
+	**1**			

Ginti 3 graph



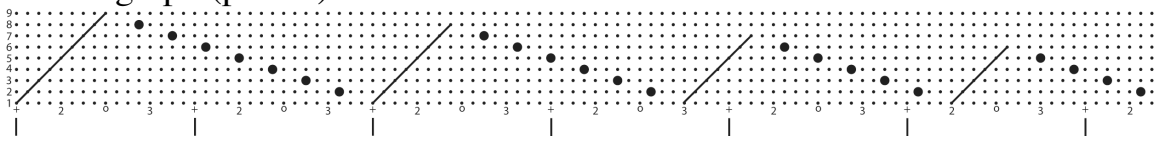
Ginti 4

This 9-cycle ginti is easy to grasp as it evolves. The number 1 quickly ascends to 9, then gradually descends in groups of three with gaps (9 – – 8 – –). As soon as each series reaches "1" it launches back up to the number 8, and so on.

+	**1**	**2**	**3**	**4**
2	**5**	**6**	**7**	**8**
o	**9**	**–**	**–**	**8**
3	**–**	**–**	**7**	**–**
+	**–**	**6**	**–**	**–**
2	**5**	**–**	**–**	**4**
o	**–**	**–**	**3**	**–**
3	**–**	**2**	**–**	**–**
+	**1**	**2**	**3**	**4**
2	**5**	**6**	**7**	**8**
o	**–**	**–**	**7**	**–**
3	**–**	**6**	**–**	**–**
+	**5**	**–**	**–**	**4**
2	**–**	**–**	**3**	**–**
o	**–**	**2**	**–**	**–**
3	**1**	**2**	**3**	**4**
+	**5**	**6**	**7**	**–**

2	–	**6**	–	–
o	**5**	–	–	**4**
3	–	–	**3**	–
+	–	**2**	–	–
2	**1**	**2**	**3**	**4**
o	**5**	**6**	–	–
3	**5**	–	–	**4**
+	–	–	**3**	–
2	–	**2**	–	–
o	**1**	**2**	**3**	**4**
3	**5**	–	–	**4**
+	–	–	**3**	–
2	–	**2**	–	–
o	**1**	**2**	**3**	**4**
3	–	–	**3**	–
+	–	**2**	–	–
2	**1**	**2**	**3**	–
o	–	**2**	–	–
3	**1**	**2**	–	–
+	**1**			

Ginti 4 graph (partial)



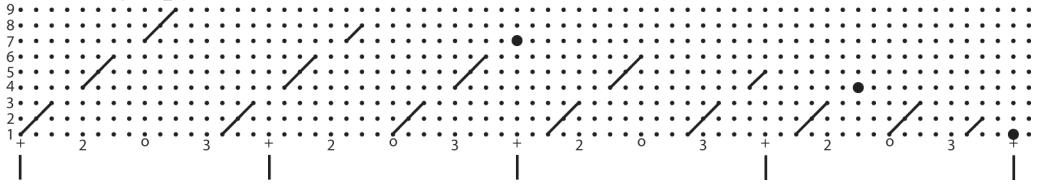
Ginti 5

This 4-cycle ginti ascends from 1–9 with intermittent gaps that seem to follow no apparent pattern. At the top of each series is either a single gap (1 dash) or a double gap (2 dash). If the number at the top is divisible by 3 (9, 6, 3) then the double gap would be applied. All other top numbers (8, 7, 5, 4, 2) apply the single gap.

+	**1**	**2**	**3**	–
2	**4**	**5**	**6**	–
o	**7**	**8**	**9**	–
3	–	**1**	**2**	**3**
+	–	**4**	**5**	**6**
2	–	**7**	**8**	–
o	**1**	**2**	**3**	–
3	**4**	**5**	**6**	–
+	**7**	–	**1**	**2**
2	**3**	–	**4**	**5**
o	**6**	–	–	**1**

3	**2**	**3**	**–**	**4**
+	**5**	**–**	**1**	**2**
2	**3**	**–**	**4**	**–**
o	**1**	**2**	**3**	**–**
3	**–**	**1**	**2**	**–**
+	**1**			

Ginti 5 graph



Ginti 6

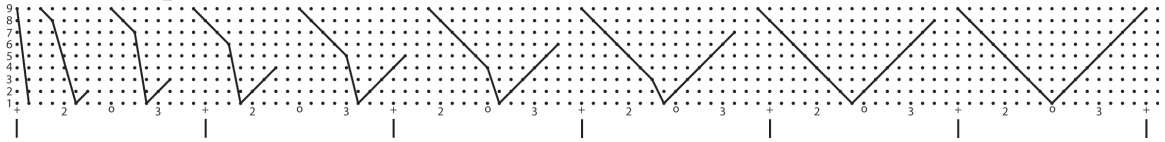
This challenging 6-cycle ginti functions like a mirror, as revealed in the first two lines below. The number 9 is followed by 1 (its mirror). The next series 9 8 is followed by its mirror 1 2. Continuing this model is 9 8 7 1 2 3, etc. The last cycle that begins with "9" contains a perfect series from 9 to 1 and back to 9 where the ginti ends.

Ginti 6

+	**9**	**1**	**–**	**9**
2	**8**	**1**	**2**	**–**
o	**9**	**8**	**7**	**1**
3	**2**	**3**	**–**	**9**
+	**8**	**7**	**6**	**1**
2	**2**	**3**	**4**	**–**
o	**9**	**8**	**7**	**6**
3	**5**	**1**	**2**	**3**
+	**4**	**5**	**–**	**9**
2	**8**	**7**	**6**	**5**
o	**4**	**1**	**2**	**3**
3	**4**	**5**	**6**	**–**
+	**9**	**8**	**7**	**6**
2	**5**	**4**	**3**	**1**
o	**2**	**3**	**4**	**5**
3	**6**	**7**	**–**	**9**
+	**8**	**7**	**6**	**5**
2	**4**	**3**	**2**	**1**
o	**2**	**3**	**4**	**5**
3	**6**	**7**	**8**	**–**
+	**9**	**8**	**7**	**6**
2	**5**	**4**	**3**	**2**
o	**1**	**2**	**3**	**4**

3 **5** **6** **7** **8**
\+ **9**

Ginti 6 graph



Music Example: "Geo"

At the PAS website, where all of the video links are provided, you will find a contemporary recording that features the six ginti of this article. The composition I composed with George Ruckert is called "Geo" and departs radically from traditional application. The tune is built in a "drum and bass" context with Mister Rourke on turntables, Randy Roos on bass guitar, and me layering percussion and vocals. The numbers 1–9 are treated as scale tones on the African log xylophone called "balafon."

The tune, which includes a 7th ginti, concludes with a long number composition from South Indian repertoire called Korvai. You can hear "Geo" online and/or email me at jleake@berklee.edu to receive a free download of the composition.

Summary / Conclusion

Ginti represent a unique and fascinating way to learn how a number series can be adapted into drum strokes or melody tones, and built into entire compositions. In a traditional kathak dance performance a specific model of presentation is usually followed: the dancer or drummer recites a ginti with kriya gestures that unfold into a duet performance of the same ginti. The performers sometimes know a given ginti in advance (by chance or by rehearsal) or learn it on the spot by unlocking the pattern as it unfolds.

Children are taught how to count in a variety of ways by parents and teachers, exploring counting games and other clever ways to share in the learning process. For musicians, ginti can represent an exciting adventure with numeric patterns that are adaptable to any instrument.