

Unit 16 Cyclic patterns

Exploring rhythm and pulse

ABOUT THE UNIT

This unit develops pupils' ability to perform rhythmic patterns confidently and with a strong sense of pulse.

In this unit, pupils learn basic rhythmic devices used in many drumming traditions. They play a variety of sounds on percussion instruments and learn how to use timbre and duration to add variety to their rhythmic ideas. They invent and improvise simple rhythmic patterns.

WHERE THE UNIT FITS IN

This unit links to the Ongoing skills unit (Unit 15), reinforcing the sense of pulse and metre and extending aural memory. It builds on Units 3, 4, 10 and 14 and leads to Unit 20. It can be used to revise many of the skills and much of the knowledge developed in years 3 and 4.

PRIOR LEARNING

It is helpful if children and teachers have:

- developed a sense of pulse
- recognised how beats can be organised into stronger and weaker patterns
- begun to identify different kinds of music played on percussion instruments
- developed their skills through the activities described in Units 3, 4 and 10

VOCABULARY

In this unit children will have an opportunity to use words and phrases related to:

- sounds, *eg pulse, rhythm, timbre, duration, open and closed sounds, percussion, tuned*
- processes, *eg use of cyclic patterns in Kaherva*
- context, *eg effect of cyclic patterns in African and Indian music*

RESOURCES

Stimulus:

- Tal, rhythmic pattern, percussive sounds

Sound sources:

- untuned percussive instruments
- tuned percussive instruments
- body sounds

EXPECTATIONS

at the end of this unit

most children will: create rhythmic patterns with an awareness of timbre and duration; perform these confidently with a strong sense of pulse within simple cyclic patterns

some children will not have made so much progress and will: show an awareness of timbre and duration but need help in feeling the cyclic patterns and creating rhythmic patterns

some children will have progressed further and will: identify and feel the cyclic patterns; create more complex patterns; maintain their own part with awareness of how the different parts fit together

EXTENSION AND FUTURE LEARNING

In addition to the examples given in the 'Points to note' section, children could go on to:

- create longer rhythmic patterns and patterns in different cycles
- identify sources of sounds other than musical instruments at home and in the classroom and use them in creative percussion work
- explore how the use of different kinds of percussive sounds affect the listener
- create a rhythmic accompaniment to a song for presentation to other classes and to parents

ENRICHMENT

- Children could work with Indian or African musicians, developing an awareness of cyclic patterns and the ability to create polyrhythms using short rhythmic patterns.
- The class could explore the vocalisation of rhythmic patterns with African or Asian musicians.

INTRODUCTION: HOW DOES SOME MUSIC USE CYCLIC PATTERNS?

<ul style="list-style-type: none"> • about cyclic patterns 	<ul style="list-style-type: none"> • Listen to a variety of rhythmic music from different parts of the world and encourage the children to clap and move to the pulse. • Tell the class that this unit will explore how rhythms can be used repeatedly in cycles, that is, a fixed number of beats repeated continuously with no fixed end point within which rhythms can be repeated, improvised and developed, and how these rhythms can be made more interesting by adding different dynamics, durations and timbres. 	<ul style="list-style-type: none"> • identify different speeds of pulse (tempi) by clapping and moving 	<ul style="list-style-type: none"> • Include music such as a <i>Brandenburg concerto</i>, Bach, heavy rock (taking care to select music with words appropriate to this age range), Indian and African drumming music. • Help the children to understand that in much western music, including most popular music, the listener is taken on a musical journey from the beginning to the end. In this way it has a linear progression. Other music, including music from Africa and India, does not progress in this way, but instead uses cyclic patterns that are repeated constantly. The effect is of stepping out of time. The constant repetition allows the listener to concentrate on their own feelings with greater intensity.
---	--	---	--

EXPLORATION: HOW CAN DIFFERENT SOUNDS BE USED RHYTHMICALLY?

<ul style="list-style-type: none"> • that percussion instruments can produce a wide range of sounds 	<ul style="list-style-type: none"> • Make different sounds on various percussion instruments for the class and ask children to describe them. • Discuss differences in timbre (open and closed), duration (long and short), dynamics (loud and quiet). Talk about the way these sounds are made. • Listen to the recordings of drumming from India, Africa and other parts of the world. • Place children in groups, each group with an instrument, and ask them to try and make new sounds, <i>eg by playing on different parts of the instrument, with different parts of the hand, different fingers, two sounds together</i>. Ask them, in particular, to explore open and closed sounds on the same instrument. Ask them to pass the instrument around the group, each child making a different sound. They could try to alternate open sounds with closed sounds. • Talk about how the pitch of some kinds of drum can be made higher or lower. [Link to science] 	<ul style="list-style-type: none"> • identify and control different ways percussion instruments make sounds 	<ul style="list-style-type: none"> • Use as many Indian, African and other percussion instruments as possible. Wherever possible use the names of the instruments. • Encourage children to use the musical vocabulary described in this and earlier units. • Open sounds are when the sound is bright and resonates, <i>eg a suspended triangle played with a metal beater</i>. Closed sounds are when the sound is dull and short, <i>eg a triangle held by the hand to stop the sound resonating</i>. • Remind children how to hold and play instruments to obtain the greatest variety of sounds. Also remind them how to keep them silent when they are not in use. • Encourage children to care for the instruments by exploring how they are made and the function of each part of the instrument.
--	--	--	---

EXPLORATION: HOW CAN DIFFERENT SOUNDS BE USED RHYTHMICALLY? (Cont.)

<ul style="list-style-type: none"> • how different patterns can fit together 	<ul style="list-style-type: none"> • Listen to recordings of drumming. Focus on the rhythmic features. Can you identify repeated sounds, rhythmic patterns? Can you identify any instruments? Are all the sounds of the same volume? Which sounds contrast with each other? • Discuss patterns which are repeated and help the class to recognise how smaller patterns can fit within longer patterns, eg <i>hours in days, seasons in a year.</i> • Revise earlier work on pulse and rhythm. Help the class to keep a steady pulse using body movement, clapping and instruments. Ask individuals to improvise rhythmic patterns to the pulse using body percussion or classroom instruments. • Ask the class to clap eight beats, counting one to eight out loud. Now ask them to clap on the first beat and tap the remaining beats on their knees. Now make the fifth beat silent. Keep repeating this cyclic pattern of eight beats. • Divide the class into two groups. One half keeps the pulse going. The other half, at a signal from the teacher, clap at half the speed or twice as fast (see below). Keep the tempo steady and the clapping quiet. Encourage the children to look carefully at the way the parts fit together, eg <div data-bbox="383 837 1041 949" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 25%;">1 2 3 4</td> <td style="text-align: center; width: 25%;">1 2 3 4</td> <td style="text-align: center; width: 25%;">1 2 3 4</td> <td style="text-align: center; width: 25%;"></td> </tr> <tr> <td style="text-align: center;">x x x x</td> <td style="text-align: center;">x x</td> <td style="text-align: center;">x x x x x x x x</td> <td></td> </tr> <tr> <td style="text-align: center;">given speed</td> <td style="text-align: center;">twice as slow (half speed)</td> <td style="text-align: center;">twice as fast</td> <td></td> </tr> </table> </div>	1 2 3 4	1 2 3 4	1 2 3 4		x x x x	x x	x x x x x x x x		given speed	twice as slow (half speed)	twice as fast		<ul style="list-style-type: none"> • identify rhythmic patterns, instruments and repetition • keep a steady pulse and improvise rhythmic patterns • subdivide the pulse keeping to a steady beat 	<ul style="list-style-type: none"> • Encourage the children to have a go at improvising rhythmic patterns. For those few who may have less confidence encourage them to use word rhythms – these can be any words and do not need to make sense. They could be their own mnemonics. They may need to stop tapping the pulse while they think about their rhythm. • When using silent beats encourage the class to make a strong (silent!) physical gesture to reinforce the pulse. • Subdivision of the pulse is an essential skill. Encourage children to subdivide exactly rather than crush the extra notes into the beginning of the pulse. 												
1 2 3 4	1 2 3 4	1 2 3 4																									
x x x x	x x	x x x x x x x x																									
given speed	twice as slow (half speed)	twice as fast																									
<ul style="list-style-type: none"> • about particular cyclic patterns 	<ul style="list-style-type: none"> • Teach the class the structure of a particular cyclic pattern, eg <i>Kaherva</i>. Help the class to explore and control the different timbres on the drums and to use different dynamics. • Encourage the class to invent words to describe the different sounds, eg <i>ba, ba, ba, ba; tick, tick, tick, tick.</i> • Ask some children to improvise rhythmic patterns over the <i>Kaherva</i>. 	<ul style="list-style-type: none"> • explore and perform a particular cyclic pattern 	<ul style="list-style-type: none"> • <i>Kaherva</i> uses 8 beats: (see notes below) <div data-bbox="1624 1045 2049 1236" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td><td style="text-align: center;">6</td><td style="text-align: center;">7</td><td style="text-align: center;">8</td> </tr> <tr> <td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">○</td><td style="text-align: center;">●</td><td style="text-align: center;">●</td><td style="text-align: center;">●</td><td style="text-align: center;">●</td> </tr> <tr> <td style="text-align: center;">x</td><td></td><td></td><td></td><td style="text-align: center;">-</td><td></td><td></td><td></td> </tr> </table> <p style="font-size: small; margin-top: 5px;">○ open sounds ● closed sounds on the same instrument x a second instrument with an open sound - a second instrument with a closed sound</p> </div>	1	2	3	4	5	6	7	8	○	○	○	○	●	●	●	●	x				-			
1	2	3	4	5	6	7	8																				
○	○	○	○	●	●	●	●																				
x				-																							

BRINGING IT ALL TOGETHER: CAN WE MAKE OUR OWN CYCLIC PATTERN?

<ul style="list-style-type: none"> • how to invent simple rhythmic patterns 	<ul style="list-style-type: none"> • Divide the children into groups with one instrument to each group. Ask each group to invent a rhythmic pattern one cycle in length using open and closed sounds. Ask each group, in turn, to play their rhythmic pattern while the rest of the class plays the cyclic pattern. 	<ul style="list-style-type: none"> • invent simple rhythmic patterns 	<ul style="list-style-type: none"> • The number of beats chosen for the cyclic pattern can affect the difficulty, eg <i>cyclic patterns made up of five or seven beats can be more of a challenge than cyclic patterns of four or eight beats.</i> • This can be repeated with patterns of different lengths, eg <i>two cycles in length, half a cycle in length.</i>
<ul style="list-style-type: none"> • how to expand rhythmic ideas using timbre and duration and by rearranging the rhythmic material 	<ul style="list-style-type: none"> • Now begin to think about the timbre and duration of the instrumental sounds used to play the rhythmic patterns. <i>What instrument and what sound are best suited to the playing of a steady pulse, a fast rhythmic pulse, a single note played at the beginning of the cycle? How can you make your rhythmic patterns more interesting, eg making greater use of the different timbres (open and closed sounds) available on each instrument?</i> • Ask each group to see how many new patterns they can create from a chosen pattern by either changing around the rhythmic material, or repeating one part of the pattern, making it twice as long. • Ask the groups to share their work with the class several times during the process so that advice can be given about how improvements could be made. • Perform and discuss the best features. • Select one example and create a class performance in which individual children add further improvised patterns to the given rhythmic pattern performed by the selected group. 	<ul style="list-style-type: none"> • make improvements to their own work • create and develop ideas 	<ul style="list-style-type: none"> • Lead discussions on why one drum pattern may sound more interesting than another, and how tastes may differ from person to person. • Ask children to memorise a set of these patterns. Let them discuss which order they should go in and then perform them one after the other.

Background information: African rhythms

Two Against Three

1 . 2 . 3 .
1 . . 2 . .

The rhythmic feeling of two against three is very prominent in African music. The following is a step-by-step method to gain mastery of this bi-rhythm. This exercise was adapted for the World Wide Web from the book, [Ancient Traditions--Future Possibilities](#) by Matthew Montfort, Exercise III A, pages 18-20.

1. Count the numbers in the middle column out loud, tapping with the left hand on one, and with the right hand on one, three and five:

LEFT HAND	COUNT	RIGHT HAND
1	1	1
	2	
	3	3
	4	
	5	5
	6	

2. Then tap on one and four with the left hand while tapping on one with the right hand:

LEFT HAND	COUNT	RIGHT HAND
1	1	1
	2	
	3	
4	4	
	5	
	6	

LEARNING OBJECTIVES
CHILDREN SHOULD LEARN

POSSIBLE TEACHING ACTIVITIES

LEARNING OUTCOMES
CHILDREN

POINTS TO NOTE

3. Combine steps 1 and 2:

LEFT HAND	COUNT	RIGHT HAND
1	1	1
	2	
	3	3
4	4	
	5	5
	6	

4. The next step is to transfer your awareness from a feeling of six pulses to a feeling of two pulses with the left hand against three pulses with the right. Tap out the same pulses as in step 3, but this time count out loud only the pulses of the right hand:

LEFT HAND	COUNT	RIGHT HAND
1	1	1
*	*	*
*	2	2
2	*	*
*	3	3
*	*	*

Note: * = rest

5. Then count out the pulses of the left hand while tapping three pulses with the right hand and two pulses with the left hand, as follows:

LEFT HAND	COUNT	RIGHT HAND
1	1	1
*	*	*
*	*	2
2	2	*
*	*	3
*	*	*

It may be helpful to try the following counting scheme as a preparatory step:

LEFT HAND	COUNT	RIGHT HAND
1	1	1
*	*	*
*	2	2
2	&	*
*	3	3
*	*	*

When counting 1 * 2 & 3 * , accent the & of 2.

Then change the count to 1 * * & * * .

Finally, change the count to 1 * * 2 * * .

6. Keeping a slow tempo, alternate between step 4 and step 5 until it is possible to switch between them at will. This is similar to switching between the two perspectives of an Escher print.



Two Against Three MIDI File This MIDI file accompanies the previous six steps (not including the optional preparatory steps given for step 5). Each step is repeated four times, with two bars of rest between the steps.

In the above example, "*" stands for an eighth-note rest in 12/8 time, the syllables "GO" and "dzi" each stand for an eighth note, "|" stands for a bar line, and ":" and ":" are repeat signs.

The first "dzi" of the resultant pattern is left out of the first cycle, replaced in the notation by a rest in parenthesis. The resultant phrase does not start until the syllable "GO," ending on the first beat of the cycle, as follows:

GO dzi GO GO dzi GO * dzi * GO |dzi

Tap the bell part with the right hand while tapping the clap part with the left hand, and simultaneously recite the syllables, alternating between the syllables for the bell part, clap and resultant. The following chart may be helpful in visualizing your hand alternation:

R * R * R R * R * R * R

L * * L * * L * * L * *



[Eve Bell Pattern MIDI File](#). This MIDI file is a performance of the bell pattern against the clap. Listen for each part separately.



[Resultant Pattern MIDI File](#). This MIDI file is a performance of the resultant pattern created by the bell pattern and clap. Therefore, it does not start on the first beat of the cycle, for the reasons stated above.

Background information: Indian rhythms

Kaherava may be considered to be the most popular *tal* in Northern India. It is an eight-beat *tal* of the non-classical traditions. It is widely used in folk music, *filmi sangeet*, *qawwali*, *rabindra sangeet*, and *gazal*. It is not found in the classical traditions such as *kheyal*, *tarana*, *dhrupad*, and *dhammar*.

The structure of *kaherava* is simple. It is composed of two *vibhags* of four *matras* each. The first *vibhag* is denoted by a *clap*, while the second *vibhag* is denoted by a *wave of the hand*.

The broad popularity of *kaherava tal* is a bit misleading. Its popularity is skewed by the fact that the term *kaherava* is applied to a broad number of unrelated *tals*; therefore, virtually any four, eight, or sixteen *matra tal* of the non-classical traditions may be called *kaherava*. It should be no surprise that there are countless *prakars* (variations).

The "official" theka is shown below:

CLAPPING/ WAVING ARRANGEMENT

clap, 2, 3, 4, wave, 2, 3, 4

NUMBER OF BEATS

8

THEKA

♪	♪	♪	♪	♪	♪	♪	♪
*धा	गे	ना	ती	ना	क	धिं	ना
Dhaa	Ge	Naa	Tee	Naa	Ka	Dhin	Naa


Indian Rhythmic Cycles

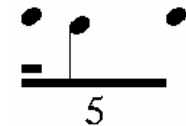
The concept of the ever-recurring cyclic rhythms of the universe is one of the basic tenets of Hindu philosophy. The perception of the cyclic nature of life is reflected in Indian classical music through the device of *tala*, a recurring time-measure or rhythmic cycle. Just as in the Hindu religion, man is born, lives his life, dies and is then reincarnated to begin a new life, so the tala cycle begins, develops and then returns to the *sam*, the first beat of the cycle, anchor of all melody and rhythm and the leading beat to which all returns.

There are two different traditions in Indian classical music, the *Carnatic* music of South India and the *Hindustani* music of North India. The music of South India retained a purity of development that has led to a highly organized theoretical system. In contrast, Hindustani music has achieved its equally high artistic standards through the cultural interaction between Hindus and Muslims, producing an extremely rich but less-systemized music.

The book [Ancient Traditions--Future Possibilities](#), by Matthew Montfort, contains exercises that teach both North and South Indian rhythms. Some of these exercises are adapted here for the World Wide Web.


South Indian Grooves

 [South Indian Solkattu MIDI File](#). *Solkattu* is the onomatopoetic drum syllable language of the mridangam. This composition in *khanda gati adi tala*, an 8 beat rhythmic cycle where each beat is divided into quintuplets, is an advanced example.



North Indian Grooves

The tabla has a language all its own. For every sound on the drum there is a corresponding syllable. These syllables are known as *bols*, and to the tabla master these onomatopoetic bols and their corresponding sounds on the drums are almost one and the same. Each North Indian tala has a *theka*, a standard set of bols that identify the rhythmic cycle. The theka aids the soloist in keeping time. Practice reciting the following thekas while keeping track of the rhythmic cycle, as shown in the following link. The MIDI files of these thekas make excellent groove tracks for creating compositions or practicing.

 [Thirteen Talas](#) is an explanation of the thekas for thirteen different talas, including instructions for *keeping tal* (marking of the beat using hand gestures), as well as MIDI files of the thekas arranged for General MIDI conga and bongo.

 [Rupak MIDI File](#)

7 beats, unusual in that sam and khali fall on the same beat, divided 3 + 2 + 2:

0 2 2

| : tin tin na dhin na dhin na : |

 [Jhaptal MIDI File](#)

10 beats, divided 2 + 3 + 2 + 3:

+ 2 0 3

| : dhi na dhi dhi na ti na dhi dhi na : |

 [Ektal MIDI File](#)

12 beats, divided 2 + 2 + 2 + 2 + 2 + 2:

+ 0 2 0 3 4

| : dhin dhin dhage terikita tun na kat ta dhage terikita dhin dhage : |

 [Charchar MIDI File](#)

14 beats, divided 3 + 4 + 3 + 4:

+ 2 0 3

| : dha dhin * dha dha tin * ta tin * dha dha dhin * : |

 [Chowtal MIDI File](#)

12 beats, divided 2 + 2 + 2 + 2 + 2 + 2:

+ 0 2 0 3 4

| : dha dha din ta kat dhage din ta tete kata gadi gena : |

 [Dhammar MIDI File](#)

14 beats, divided 5 + 2 + 3 + 4:

+ 2 0 4

| : kat dhe te dhe te dha * ge te te te ta * : |

 [Ardha Jaital MIDI File](#)

6 1/2 beats, divided 3 + 2 + 1 1/2

0 2 3

| : tin * na * teri kita dhin * na * dha ge na : |

 [Upa Dasi MIDI File](#)

10 1/2 beats, divided 1 1/2 + 1 1/2 + 1 1/2 + 1 1/2 + 1 1/2 + 1 1/2 + 1 1/2:

+ 0 2 0 3 4 5

| : tin * ta * teri kita tin * ta teri kita dhin * dha ge na dhin * dha ge na : |

 [Chartal Ki Sawari MIDI File](#)

11 beats, divided 2 + 2 + 2 + 2 + 1 1/2 + 1 1/2:

+ 2 0 3 4 5

| : dhin * teri kita dhi * na * tun * na * kat * ta * dhin * na dhin * na : |

Possible Web Links

http://chandrankantha.com/tala_taal/kaherawa_kherwa/kaherva.html

http://www.worldjazz.ch/rhythm_training.htm

<http://perso.wanadoo.fr/caraibe.music/pages/music.htm>

<http://www.beatofindia.com/mainpages/highlights.htm>

<http://www.afromix.org/static/music/midi/index.en.html>

<http://www.ancient-future.com/rhythm.html>