AN UP-TO-DATE VIEW OF RICARDO TACUCHIAN'S (b.1939) T-SYSTEM

*Savio Santoro**

RESUMO: Versão atualizada do Sistema-T criado pelo compositor brasileiro Ricardo Tacuchian (n. 1939, Rio de Janeiro) no fim da década de 1980. Este informe baseia-se, principalmente, em testemunhos gravados em entrevista pelo autor, análise de partituras e gravações e produção literária do compositor.

PALAVRAS-CHAVE: Ricardo Tacuchian; música contemporânea brasileira; teoria/composição

ABSTRACT: An updated overview of the T-System created by the Brazilian composer Ricardo Tacuchian (b. 1939, Rio de Janeiro) in the late 1980s. This document is mainly based on testimonies recorded by the author, analysis of scores and recordings, and literary production by the composer.

KEYWORDS: Ricardo Tacuchian; Brazilian contemporary music; theory/composition

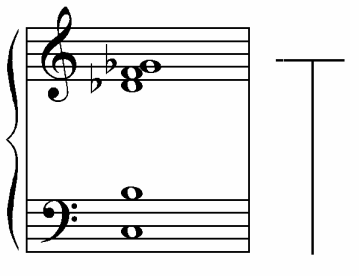
The Brazilian composer Tacuchian (b. 1939, Rio de Janeiro) enjoyed a significant reputation in the 1960s with his nationalist/neoclassical pieces, characterized by the influence of the writer Mário de Andrade (1893-1945), and his principal mentors: the composers Francisco Mignone (1897-1986) and José Siqueira (1907-1985). At the late 1960s, Tacuchian started to broach the avant-garde, a style utilized by the majority of the composer of the 1970s. From the 1980s, Tacuchian adopted a new posture or "musical behavior: the postmodernism. With the creation of the T-System, the composer coordinated the "attitudes" of the postmodernism with his compositional approach in the late 1980s.

The creation of the T-system happened spontaneously. Tacuchian was composing a piece, the nonet *Rio/LA* (1988),[1] in which he wanted to utilize the urban environment as one of the features of postmodernism: "It is a piece that shows the similarities between the big cities of Los Angeles and Rio de Janeiro" (TACUCHIAN, 2005).[2] The composer wished to write this piece using certain structural elements, among them a very dissonant five-note chord in a defined voicing (shown in Ex. 1) which could symbolize the hard sounds of both cities. The chord, labeled by Tacuchian as the T-chord,[3] would be one of the main elements of the structure of *Rio/LA*.

*Doctor of Musical Arts, Boston University (2006)
Universidade Federal Fluminense
Bolsa Capes
saviosantoro@yahoo.com

[1]The composer was living in Los Angeles while composing this piece.
[2]All translations are by the author of this article.
[3]Tacuchian chose this name because of the T shape of the written chord, which also coincides with the first letter of his name.

Ex. 1. T-chord.

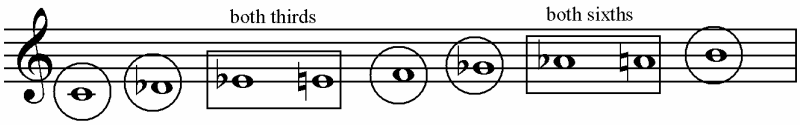


With this chord defined, the composer realized that he needed a specific scale from which he could improvise melodies based on this chord (which would be the harmonic basis of the piece), as jazz musicians regularly do. Therefore he constructed an artificial scale which needed to include these five notes. Tacuchian states:

> The scale could not have more than nine pitches, otherwise it would be an 'almost chromatic scale.' If it had less than nine pitches, it could resemble an octatonic scale, which is very close to the traditional scales. I found that the number nine would be the ideal. (TACUCHIAN, 2005).

If the major scale is "major" because it includes a major third and a major sixth, he decided to insert both major and minor thirds and sixths, which would characterize it as neither major nor minor. Since the root relationship between dominant and tonic is one of the intervals that most characterize the tonal scale, the composer abolished the perfect fifth above the first degree of the basic T-scale. So the final T-scale is presented as follows:

Ex. 2. Basic T-scale (circled notes are derived from the T-chord).



The composer remarks: "In *Rio/LA* I made some experiments that I was afraid would not work, but they did work, thanks to this system" (TACUCHIAN, 2005). The next major piece to employ both the T-chord and T-scale was the symphonic ballet *Hayastan*, his final doctoral project at the University of Southern California. Perceiving the positive aural results produced in these works as well as in other compositions using this approach, the composer imagined that he could transform these mechanisms into a theoretical system.

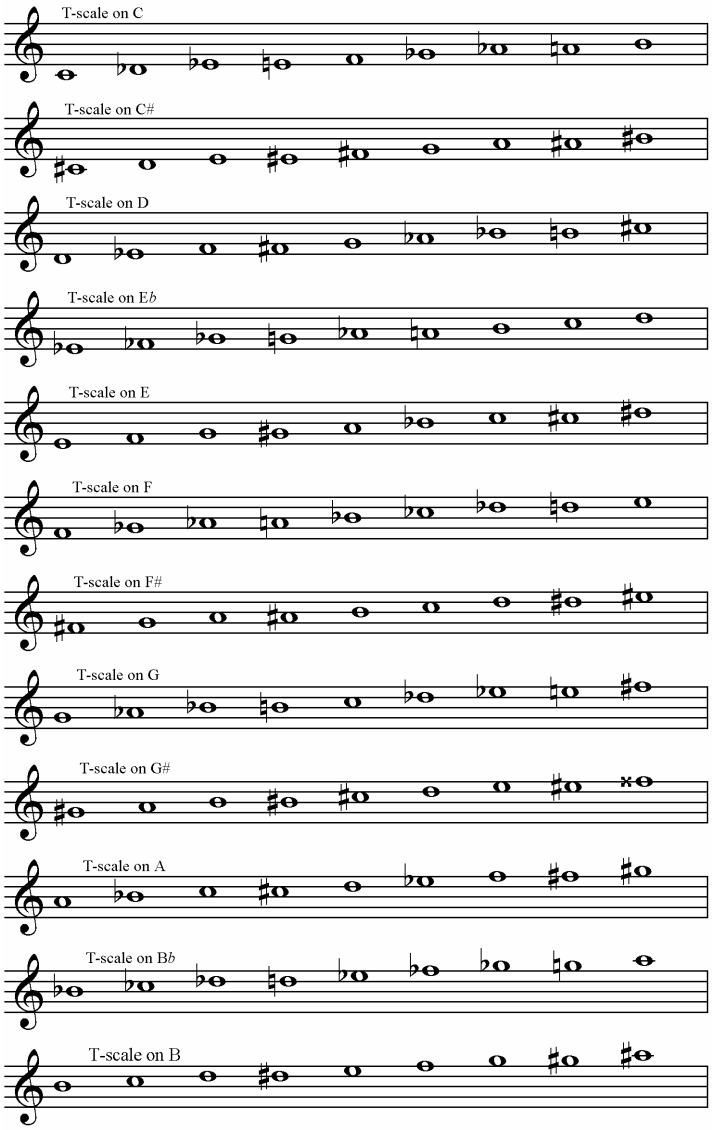
Before fully explicating the T-system, Tacuchian outlined several rules for using the T-chord as well as for harmony in a piece using the system, as detailed in his article *"Fundamentos Teóricos do Sistema-T."* Years ago, he abolished the concept of the T-chord and gave freedom to harmony: "Today I understand as T-chord any harmony that is derived from the T-scale" (TACUCHIAN, 2005). Thus the concept of the T-chord that was the genesis becomes more generic at this point, and the composer began to be interested mainly in the collection of nine pitches. The T-system elaborated at this time has three types of organization: scale-based, serial, and consistent set (each technique was created one after the other).

The scale-based procedure

As with any tonal piece, a work constructed under scalar organization would follow the pitches of a given T-scale. However a piece can be based on more than one T-scale, as happens in *Xilogravura* (2004) for viola and piano (a piece commissioned and dedicated to the author of this article). So the T-system abandons the early concept that only the basic T-scale (starting on C, as shown before) is used.

Tacuchian realized that if he transposes the basic T-scale to the eleven other pitches of the chromatic scale, there would be twelve different T-scales, thus providing twelve "tonal-like centers" (see Ex. 3).[4] This procedure is called "tonal treatment" of the T-scale by Tacuchian (TACUCHIAN, 1997, p. 47).

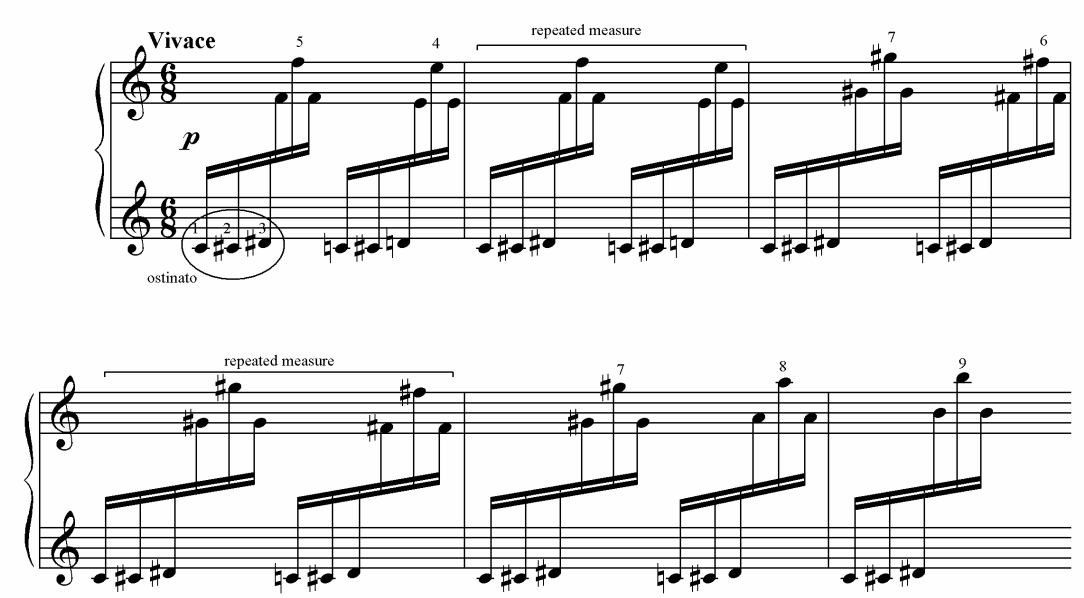
Ex. 3. Basic T-scale and its eleven transpositions.



[4]Even though the scales in Ex. 3 are different, it should be clear that these are all just transpositions of the same scale, thus with different "tonics."

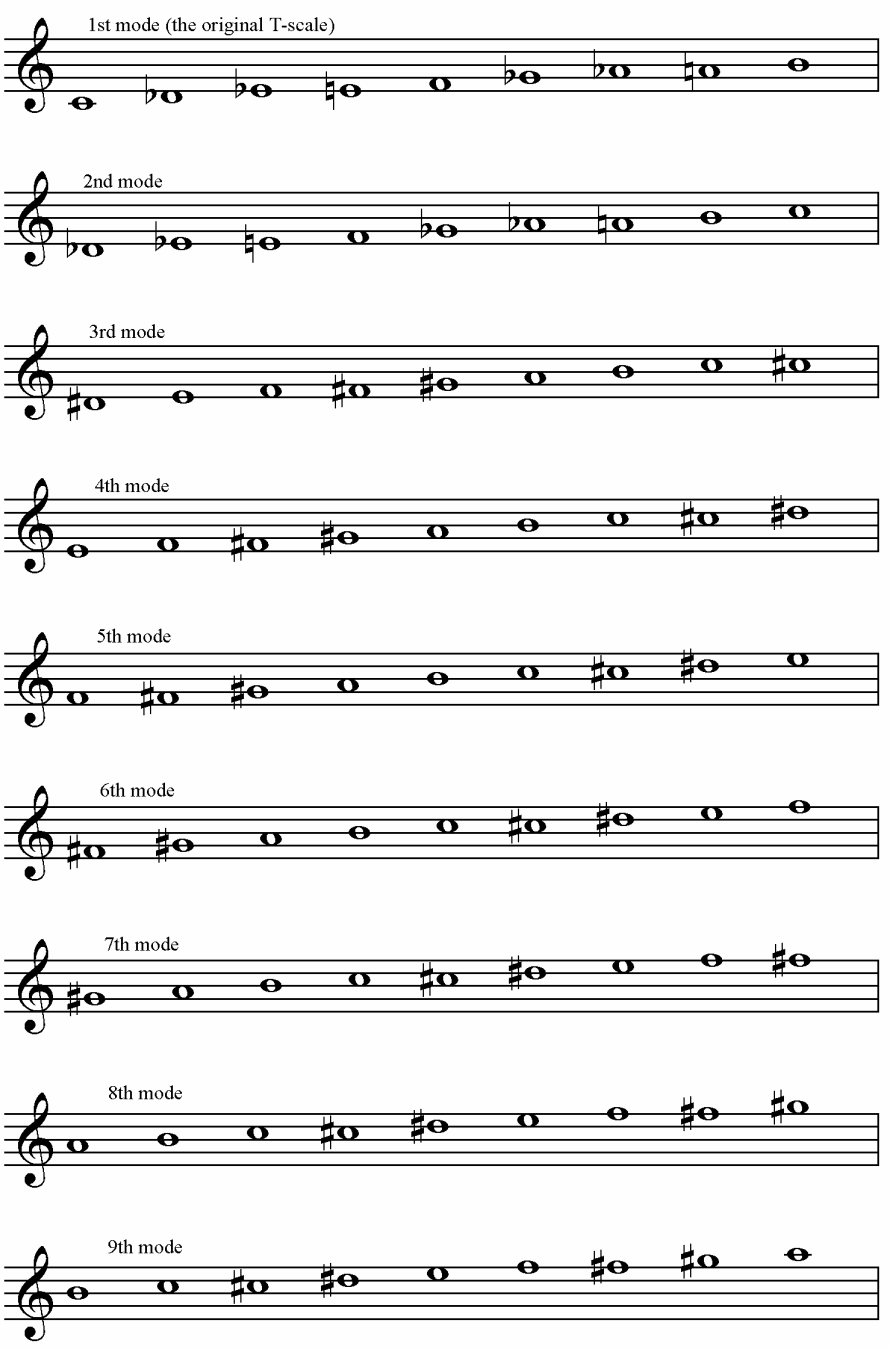
In *Avenida Paulista* (1999) for solo piano, it is interesting to note the way he keeps the first three pitches of the T-scale on C as an ostinato alternating with the other pitches of the scale (see Ex. 4).

Ex. 4. *Avenida Paulista*, mm. 1-6, piano (numbers refer to the pitch order in the scale).



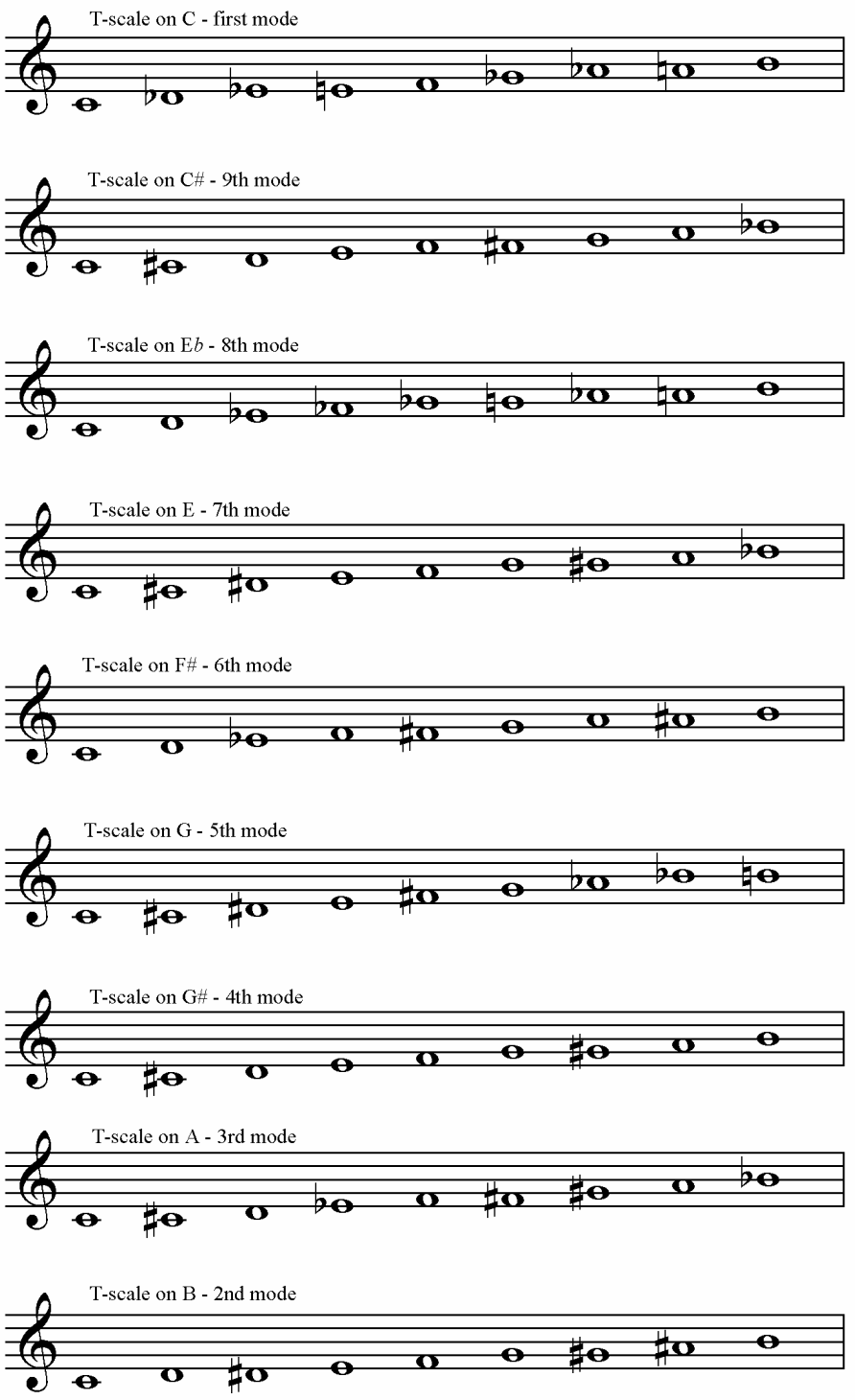
With any given T-scale, the composer realized that by rotating it, he could have, for example, the T-scale on C but with a tonal center of D*b*. Tacuchian called this procedure "modal treatment of the T-scale" (TACUCHIAN, 1997, p. 49). Therefore we may say that each T-scale has nine modes (the first is the original scale). For clarification, see Ex. 5.

Ex. 5. The nine modes of the T-scale on C.



Therefore we conclude that if each T-scale (twelve in total) has nine modes, the T-system can supply one hundred and eight different scales (12x9=108). Observe the scales below (Ex. 6): all of them have C as the first degree, but scales other than the T-scale based on C are used.

Ex. 6. Nine different T-scales with C as the first degree.



As the reader will see in the following chapter, Tacuchian may freely shift between different modes of the same T-scale. He states:

> Even working with the scale-based procedure of the T-system, the tonal center is not always evident. It can be multiple, ambiguous, or absent. It will be multiple when there are two or more T-scales sounding simultaneously or whenever there are parallel harmonies. It will be multiple when it is impossible to define with precision that a given pitch is more important than the others in a hierarchical way [as major or minor scales]. It will be absent if the degree of ambiguity is extreme. (TACUCHIAN, 1997, p. 51).

The serial organization

In developing the T-system, Tacuchian realized that he could transform the notes of a T-scale into a series, following the principles of Schoenberg's serialism. In *Xilogravura*, the nine-pitch row chosen by the composer is:

B*b* G F# E D C A F D*b*

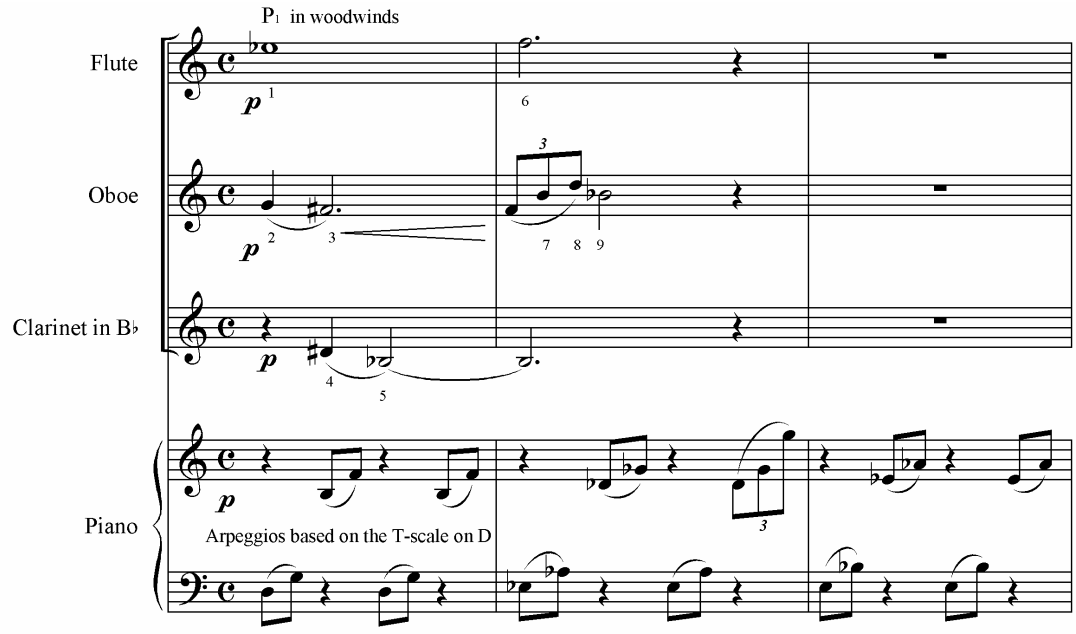
As opposed to twelve-tone serialism, in which the index to label the rows corresponds to the number of semitones distant from the main series, Tacuchian defined another criterion of indexation, since not all transpositions within the octave occur, but only eight (besides the main row which produced the matrix). However, the composer emphasizes that "nothing prevents that in the future, the nonatonic series has twelve different transpositions, instead of nine" (TACUCHIAN, 1995, p. 93). The indices 1 to 9 represent the order in which the rows are presented in the matrix (see Table 1).

Table 1. Nonatonic matrix used in *Xilogravura*.

	I_1	**I_2**	**I_3**	**I_4**	**I_5**	**I_6**	**I_7**	**I_8**	**I_9**	
P_1	B*b*	G	F#	E	D	C	A	F	D*b*	**R_1**
P_2	D*b*	B*b*	A	G	F	E*b*	C	A*b*	E	**R_2**
P_3	D	B	B*b*	A*b*	G*b*	E	D*b*	A	F	**R_3**
P_4	E	D*b*	C	B*b*	A*b*	F#	E*b*	B	G	**R_4**
P_5	F#	E*b*	D	C	B*b*	A*b*	F	D*b*	A	**R_5**
P_6	A*b*	F	E	D	C	B*b*	G	E*b*	B	**R_6**
P_7	B	G#	G	F	E*b*	D*b*	B*b*	F#	D	**R_7**
P_8	D#	C	B	A	G	F	D	B*b*	F#	**R_8**
P_9	G	E	E*b*	D*b*	B	A	F#	D	B*b*	**R_9**
	RI_1	**RI_2**	**RI_3**	**RI_4**	**RI_5**	**RI_6**	**RI_7**	**RI_8**	**RI_9**	

One of the objectives of the T-system is to move from serial organization to the scale-based procedure in a subtle way, without making obvious to the performer and audience that there was a change of techniques in the piece (this fact is especially noticeable in *Xilogravura*). The composer also points out that both of these methods of organizing the T-system can coexist at the same time (see Ex. 7).

Ex. 7. Coexistence of serial organization (woodwinds) with scale-based procedure (piano), *Giga Byte*, mm. 153-154.

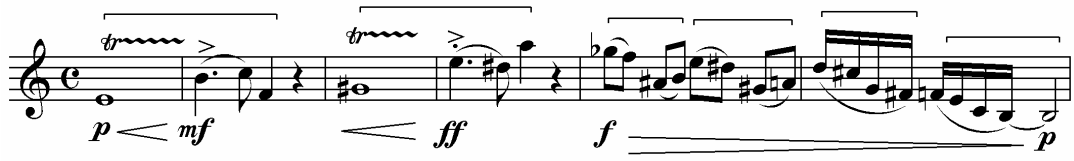


Consistent set

Augmenting the range of the T-system, Tacuchian noticed early on that he could conceive the T-chord as a pentachord (01256). He then experimented using a consistent embedded subset of this pentachord in phrases of his first pieces using this device. In this procedure, the pitches used can be derived from multiple T-scales, rather than just one.

In *Pimenta do Reino* for solo clarinet (Black Pepper, 1995), for example, Tacuchian employed the tetrachord (0156) in a six-measure phrase. In the example below, the twelve pitches of the chromatic scale were used.

Ex. 8. Use of tetrachord (0156) in *Pimenta do Reino*, clarinet, mm. 51-56.



In *Xilogravura*, Tacuchian experimented using a different pentachord ((01369)), and utilizing it for each measure of the transition (mm. 63-68) while employing different T-scales. The composer emphasizes:

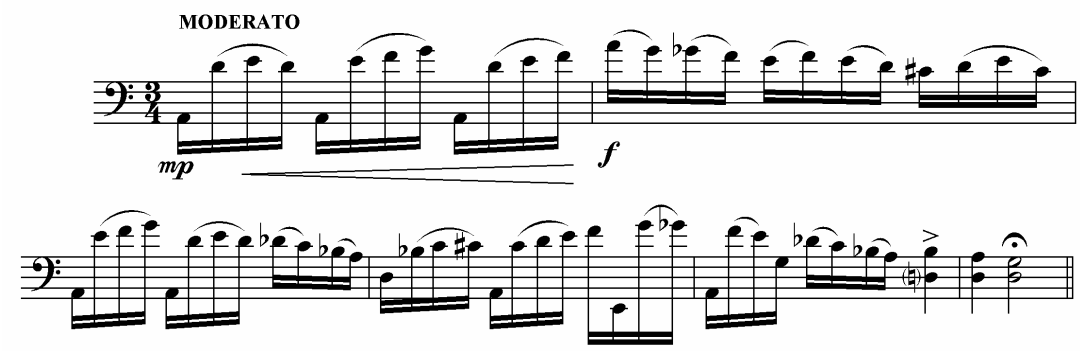
> One of the advantages of the T-system is to provide for the existence of an extremely dynamic construction, passing from the scale-based procedure to consistent set or serial methods in a metamorphosis, but within an organically organized system. (TACUCHIAN, 1997, p. 64).

Embedded scales

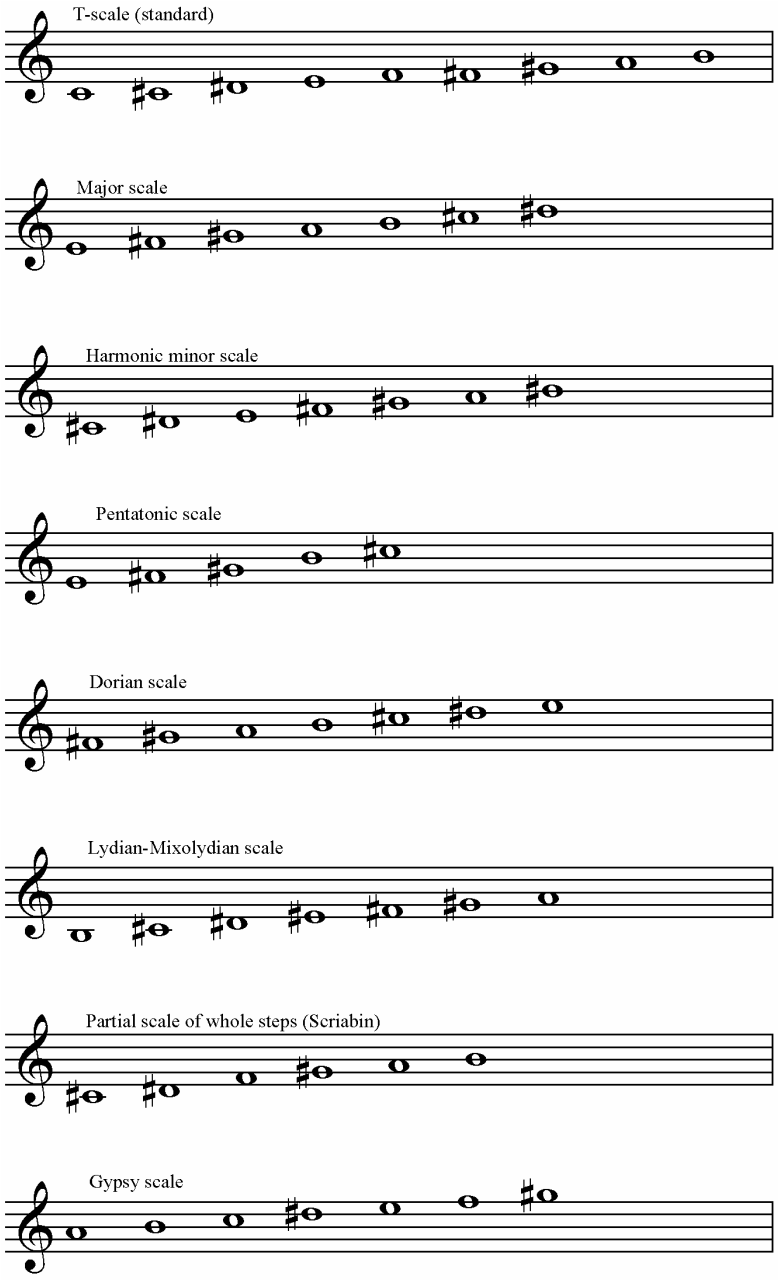
Beginning in 1996, the composer expanded the limits of the T-system even further by introducing the concept of embedded scales into the T-scale. This means that from a given rotation of a T-scale, one could extract a major and minor scale, or a pentatonic and a partial whole-tone scale, among others (see Ex. 3.9).

The embedded scale is clearly used in *Xilogravura*, subsection C_2, where the T-scale on C# (second scale of Ex. 3) is employed with an embedded D minor scale. Similarly in *Noz-moscada*, we can observe the same embedding of D minor in the T-scale on C# from mm. 111-116. In Ex. 9, observe the emphasis on the pitches D, F, A (including a long dominant pedal on A in the bass leading to the resolution on D), and the use of B*b* and C# (the submediant and leading tone of the harmonic D minor scale).

Ex. 9. *Noz-moscada*, mm. 111-116, double bass.



Ex. 10. Embedded scales in the T-scale.[5]



The most significant characteristic of the T-system is that one can use its features in an organic manner, not falling into a patchwork: the system gives unity and personality to the work. As we have exposed in this study, Tacuchian used various compositional approaches in a single piece, while maintaining coherence throughout. Finally, it should be mentioned that the creation of this system amplifies the possibilities of the composition of the Brazilian music, since any composer can use it, or even modify it for each one's compositional taste.

[5]Note in this example that in the original T-scale, D*b*, E*b*, G*b*, and A*b* are renamed C#, D#, F#, G#, respectively, in order to clarify the following scales shown.

REFERÊNCIAS BIBLIOGRÁFICAS

TACUCHIAN, R. Fundamentos Teóricos do Sistema-T. *Debates: Cadernos do Programa de Pós-graduação em Música*, n. 1, p. 45-68, 1997.

TACUCHIAN, R. *Sistema-T: Novo Método de Controle de Alturas*. 1995. Tese apresentada como requerimento parcial para o concurso para Professor Titular de Composição da Universidade Federal do Estado do Rio de Janeiro.

TACUCHIAN, R. Entrevista realizada por Savio Santoro, gravação em fita cassete, Rio de Janeiro (residência do compositor), 13 de junho de 2005.