

A Semiotic Approach to Explain Musical Teleology by Means of Musical Intelligibility

Abstract. The main idea that guides this paper is that musical teleology is not in a musical work but in listeners' minds when they transform what they listen to into something intelligible. In brief, when we listen to a musical work, we connect what we hear to transform it into something intelligible by introducing ideas not contained in musical events. As a result, the essential point is to identify which these ideas are. Peirce's semiotics is the conceptual background for this paper, and according to it, these ideas are of three general kinds only. The author names them *similarity*, *directionality*, and *simplification*. To check if these three ideas can explain more complex musical works inside tonal music, this paper analyses the first themes from the first movements of all Beethoven's 32 piano sonatas. Afterward, two contemporary musical pieces are analyzed to check if these three ideas work in a non-tonal repertoire. These works are String Quartet No. 3 by Alfred Schnittke (the first ten measures only) and *Brin* by Luciano Berio. The results show that similarity, directionality, and simplification ideas can explain musical intelligibility and teleology in traditional and contemporary music. Besides, they show that intelligibility does not depend on motives and on one single musical system to create unity and coherence. Instead, they express similarity, directionality, and simplification at the surface level, making teleology more evident.

Keywords: Music, Intelligibility, Semiotics, Teleology.

1. Introduction

The main idea that guides this paper is that musical teleology is not in a musical work but in listeners' minds when they transform what they listen to into something intelligible. As a result, we need to understand musical intelligibility to understand teleology in music.

There is a diversity of points of view about what intelligibility and other closely related terms are. Eero Tarasti (2002: 19–25), for instance, presents fourteen different explanations from different authors for the word *understanding* in music, and many of them are strikingly different. *Meaning* is a term used by both classic authors (Meyer 1956) and many recent authors (Tagg 2013, Widdess 2012, and Woods 2010). Some authors use the word *sense* (Monelle 2000), others prefer the word *expression* (Stratilková 2016).

In this paper, I use the word *intelligibility* used by Charles Sanders Peirce in his semiotics, which is the conceptual background for this paper (Peirce 1931–35, Peirce 1992–98, Atkin 2016, Bergman & Queiroz 2014, Merrell 1998 and Santaella 2005). Besides, with a few adaptations, it is possible to transfer Peirce's explanation of intelligibility to musical context.

According to Peirce (1931–35: §1.383):

the highest kind of synthesis is what the mind is compelled to make ... in the interest of intelligibility ..., and this it does by introducing an idea not contained in the data, which gives connections which they would not otherwise have had.

Adapting it to music and transforming it a little (Zampronha 2004): when we listen to a musical work, we connect what we hear to transform it into something intelligible by introducing ideas not contained in the musical events. As a result, the essential point is to identify which these ideas are. Based on Peirce's semiotics, these ideas are of three general kinds only. In musical terms, I named them *similarity*, *directionality*, and *simplification*.

1.1. Understanding *similarity*, *directionality* and *simplification*

Let us take the paradigmatic first theme of the first movement of Beethoven's piano sonata Op. 2 No. 1 in F Minor to illustrate these three main ideas. Closely following Arnold Schoenberg's analysis of this theme in his *Fundamentals of Musical Composition* (1967), we see this theme is a musical sentence.

Figure 1, letter B shows the first theme of this Sonata (the melody only). Figure 1, letter A, analyzes it as a musical sentence. It includes an opening, a climactic ascension, and a liquidation (resolution). The climactic ascension usually moves to a climax. In this case, the climax is both the final point of the climactic ascension and the beginning of the liquidation, which is why it is a connector.

Figure 1, letter C shows the three general ideas that may connect this theme. They are:

A) *Similarity*. By saying that two or more musical events are similar, we create a connection that synthesizes them and makes them intelligible. In Beethoven's theme, the motives in the opening segment are similar

because they share a melodic shape, a rhythm pattern, and a tonal reference, for instance. The general design connecting both motives is like a *type*, and its different actualizations are like *tokens*. In a few musical works, the general design is so abstract that no actualization perfectly matches it (like the concept of a subtheme in Dahlhaus 1993), confirming that it is an idea we introduce to connect the motives. Contemporary works enlarge the construction of similarity so much that new musical aspects substantiate it (like timber, morphology, and texture, for instance). The word motive may not fit well in contemporary music, and for this reason, terms like “figure” (Ferneyhough 1995) or “gesture” (Zampronha 2005) replace it. In a few cases, similarity can even be a constant state of no change, a sameness which could be intelligible as something similar to itself in time, like something that does not change when compared with itself.

B) *Directionality*. By saying that musical events have a direction or that they point to or indicate something, we connect them in an intelligible way. In Beethoven’s Sonata (see Figure 1, letter B), the segments included in the opening and the climactic ascension are similar but in a compressed way. The first part of the motive, the ascending arpeggio, is simplified into an appoggiatura, and it is still more condensed in the climax. Besides, the climax is the third step in the ascending melodic design, and you connect this ascending sequence by its structural pitches (A_b–B_b–C). In this way, the compression and the ascending movement work together to stress the idea of directionality. However, other resources can create directionality, like gradual changes in pitch density, amplification/reduction of melodic jumps, timbre changes, including many contemporary resources available nowadays. Besides, it is also possible to use “markers” to create directions. Markers are musical events used to indicate the introduction of another one, for instance. It can be a singular sound, a sudden change (a textural one, for example), a silence, or an anacrusis that announces the start of a new segment. Moreover, similarity can be used in conjunction with directionality to make directionality even more intelligible.

C) *Simplification*. By reducing musical events to a musical habit, or a convention, we make musical events intelligible. The melodic design approaches a scalar form in the two last measures of Beethoven’s theme because a scale is a highly conventional pitch ordering. However, the convention could also be a chord or include a rhythmic reduction to the beat, and the like. Simplification is not a scale or a chord as such but a *reduction* to these or other conventions. In contemporary music, the use of a fade-out to conclude a piece of music is a known cliché because it eliminates any sound features in favor of silence. In this case, simplification is the reduction to silence. When a simplification reduces to a non-conventional musical entity, the non-conventional musical entity is a perceived regularity in a musical work. However, as an alternative, borrowing can be used. Borrowing is a simplification procedure usually (but not always) taken from musical tradition and used in non-traditional musical works, as I will exemplify later. Finally, directionality and similarity may work together in favor of simplification. Directionality may stress the reduction to a convention, and similarity may highlight different phases in this reduction, for instance. However, they may be present but latent, as there is no reduction of this kind without any directionality or similarity.

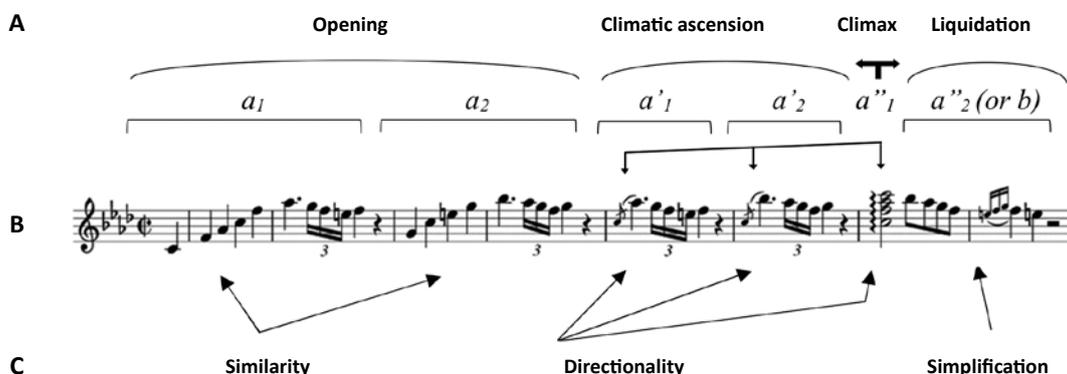


Figure 1. The first theme from the first movement of Beethoven’s piano sonata No. 1.

Letter A: Analysis based on Schoenberg (1967). This analysis is not a reproduction of Schoenberg’s one.

Letter B: Beethoven’s theme without articulations, dynamics, and accompaniment.

Letter C: the ideas of similarity, directionality, and simplification.

1.2. Explaining *teleology*

In this context, teleology is a kind of simplification, not directionality only. Teleology requires directionality, but it goes beyond that. Teleology is like a final goal that attracts the previous musical events, regardless of whether this final goal appears in the musical work. That explains why we understand that a musical excerpt “is almost achieving” a goal (it is not only “going somewhere” as it happens in directionality). It is almost achieving a goal because we *foresee* where it is going, and this projection toward the future is used to explain past events. If directionality is like an arrow pointing forward, teleology is like an arrow pointing backward. A simple modulation in tonal music is an example of it. Considering the key of C major, a correct introduction of a D Major chord can be listened to as directionality, giving us the sensation of “going somewhere” (it is a possible modulation). However, it is possible to listen to the D Major chord as the V of the G Major key, and we can do this because we take the G Major key as the final goal. However, only our musical habits allow us to foresee the G Major key as the final goal. If we listen to an E Major chord after the D Major one, our final goal is likely to change from the G Major key to the A Minor key. By doing this, we reinterpret the D major chord. Now we understand it as the IV of A Minor (subdominant) instead of the V of the G Major (a dominant), changing the musical function we had previously attributed to it. So, when we change the final goal, we reinterpret previous musical events to make them intelligible in the context of the new final goal, showing that a future goal creates an arrow that conditions the way we interpret past musical events to make sense of them. Obviously, not only does it happen in tonal music but also in other repertoires including contemporary music.

Most of the time similarity, directionality, and simplification work together, both in sequence and hierarchically. However, similarity does not depend on the other ideas to exist, and it can happen alone. To some extent, directionality requires similarity, and many times they work together. However, simplification requires the other two, which explains the high level of abstraction needed for teleological listening. As a result, similarity, directionality, and simplification can explain the phenomenon of teleology in music. Moreover, this approach to musical teleology can also guide the creation of new non-teleological and teleological musical works, particularly in recent contemporary music, showing that they can be a creative tool as much as an analytical one.

2. Testing the semiotic approach

I analyzed the first themes from the first movements of all Beethoven’s 32 piano sonatas to check if similarity, directionality, and simplification ideas can explain more complex sentence structures. Afterward, I analyzed two contemporary pieces of music to verify their efficacy in a non-tonal repertoire. They are:

- Alfred Schnittke: String Quartet No. 3 (1983), the first ten measures from the first movement.
Link: <https://youtu.be/aFuOn47MORQ>
- Luciano Berio: *Brin* for piano (1990), included in his Six encores for piano.
Link: <https://youtu.be/oIBfzKahNzI>

The links above include the recording and the music score of these works.

Different authors have studied postmodernism in music, including historical and aesthetical considerations (Berio 2007, Gloag 2012, Ramaut-Chevassus 1998). Schnittke’s work is a polystylistic postmodern work composed in 1983, using both traditional and contemporary techniques. Berio’s work is not a typical postmodern work from 1990. However, it shows influences from postmodern music from the 1980s. The use of borrowing is one of them, and I will comment on it later. However, Berio keeps many technical resources from his previous works, which produce a rich blend of musical techniques.

2.1. The first themes from the first movements of all Beethoven’s Piano Sonatas

I analyzed the first themes from the first movements of all Beethoven’s 32 piano sonatas to test similarity, directionality, and simplification ideas in a traditional but relevant repertoire. The results show that, with just a few exceptions, all themes are sentences. The exceptions are:

- The first theme of Sonatas 12, 13, and 22 are not sentences. They are periods, another traditional form that can be analyzed using similarity, directionality, and simplification ideas. Sonatas 14 to 27 include a few ambiguities that make the analysis a little more complex but feasible. For instance, the first 16 measures of sonata No. 27 form a sentence, but its understanding may change depending on how we understand the next eight measures.

- Rigorously, the first theme of Sonatas 28 and 30 are not sentences, and the traditional analysis explains them awkwardly or does not explain them at all. However, using the ideas of similarity, directionality, and simplification, we observe that the whole exposition is a musical sentence in these works, i.e., there is the transference of the sentence structure from the themes to a higher structural level. This transference conditions the design of their first themes, transforming them into openings. That explains the form they have. As a result, similarity, directionality, and simplification offer answers that go beyond the traditional analysis.

Beethoven Piano Sonatas	1 st movement, 1 st theme
N. 1 to 11	✓ Sentences
N. 12 and 13	× Not sentences
N. 14 to 21	✓ Sentences
N. 22	× Not a sentence
N. 23 to 27	✓ Sentences
N. 28	???
N. 29	✓ Sentence
N. 30	???
N. 31 and 32	✓ Sentence

Table 1. The first themes from the first movement of all Beethoven’s 32 Piano Sonatas are analyzed to identify whether they are sentences. The sonatas are grouped according to Beethoven’s three compositional periods

2.2. The first ten measures of Schnittke’s String Quartet No. 3 (1983)

The first ten measures of Schnittke’s work start with an excerpt from Orlando di Lasso’s Stabat Mater. Then, we listen to an excerpt from Beethoven’s 16th String Quartet, and then the DSCH signature honoring Dmitri Shostakovich (pitches D, Eb, C, and B). It concludes with a variation from the first excerpt by Orlando di Lasso.

The figure shows a schematic reduction of the first ten measures of Schnittke's String Quartet No. 3. It is divided into four sections:

- Orlando di Lasso:** The first two measures, showing a melodic line in the right hand and a bass line in the left hand.
- Similarity:** A dashed line indicating a relationship between the Lasso excerpt and the final Lasso variation.
- Ludwig van Beethoven:** The next two measures, showing a melodic line in the right hand and a bass line in the left hand.
- DSCH:** The next two measures, showing a melodic line in the right hand and a bass line in the left hand, with a triplet of eighth notes in the right hand.
- Lasso (a variation):** The final two measures, showing a melodic line in the right hand and a bass line in the left hand.
- Directionality:** A dashed line indicating a relationship between the Beethoven excerpt and the DSCH excerpt.
- Simplification:** A dashed line indicating a relationship between the DSCH excerpt and the Lasso variation.

Figure 2. Alfred Schnittke’s String Quartet No. 3. Schematic reduction of the ten first measures

Each excerpt fulfills a specific formal role, reinforcing the ideas of similarity, directionality, and simplification. Tension increases toward the climax, and it becomes calm again in the liquidation (the modal system returns). The excerpt by Lasso includes two segments connected by similarity, working as an opening. The excerpt by Beethoven has two similar segments, being the second one a semitone higher. In this context, it

stresses directionality. Besides, it sounds like compression because its motives are twice as fast as Lasso's ones. Also, the DSCH signature is a variation of Beethoven's excerpt, and it is the third step in the directionality. The DSCH signature is the climax, and its tension results from its atonal design and expressive melodic shape, which stress the directionality even more. The last excerpt, by Lasso, is a simplification because it resolves the musical tension. At the same time, it diminishes the harmonic complexity, and it returns to the beginning (the initial reference) with a non-conclusive cadence. As a result, similarity, directionality, and simplification ideas connect with Lasso, Beethoven, DSCH, and Lasso's last segment, stressing musical intelligibility and teleology.

Besides, the excerpt by Lasso uses a musical figure that is different from both Beethoven's one and the DSCH signature. It confirms that the use of motives or figures is not a requirement to explain intelligibility (see also Street 1998). Besides, the excerpt by Lasso is modal (despite its strong traces of tonality), the one by Beethoven is tonal, and the DSCH signature is atonal, showing that musical intelligibility does not depend on the presence of one single musical system to organize a piece of music. Intelligibility results from the ideas of similarity, directionality, and simplification.

2.3. *Brin* by Luciano Berio (1990)

Brin begins with a musical figure containing five pitches. The second figure is a variation of the first, and similarity is the idea that connects them (see Figure 3).

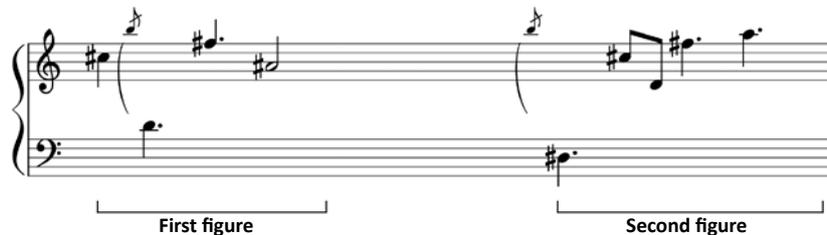


Figure 3. *Brin* by Berio. Schematic representation of the two first figures (similarity)

However, the second event is also the beginning of a directional segment. Directionality results from the chromatic saturation technique, i.e., the progressive introduction of all twelve chromatic pitches until the twelve-tone scale is saturated. In other words, after introducing the first musical event containing five different pitches, the other seven pitches that complete the twelve-tone scale appear one by one. No order is required, as it happens in dodecaphonic music, and repetitions are allowed. When the last pitch is introduced the work finishes (or it finishes just after that), or another chromatic saturation starts. In the case of *Brin*, it finishes. Note that in this analysis, the fast-ornamental pitches are considered a sound effect. So, they are not considered in the chromatic saturation.

The progressive introduction of all chromatic pitches makes the harmonic relations more complex, the number of different pitches increases and the persistence of the same figures accumulates, stressing directionality. In addition, all pitches are frozen in their registers (that is, each pitch always appears in the same octave) so that the chromatic saturation becomes clearer. Besides, Berio uses a limited set of musical figures in this work, but their arrangement never creates repetitive patterns. So, we listen to them as isolated musical figures, not phrases, directing our attention to the color changes and increased harmonic complexity produced by the chromatic saturation. In *Brin*, the complete sequence of chromatic saturation is presented in Figure 4.

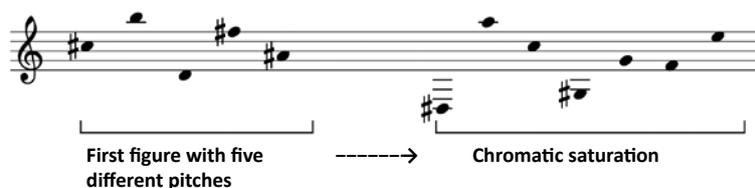


Figure 4. *Brin* by Berio. The chromatic saturation (directionality)

The last pitch in the chromatic saturation is an E, and the directionality could finish here. However, Berio stresses the final E one more time, like a confirmation, and simplification starts just after it. The simplification begins with a chord including the same five pitches that open the work, recapitulating the beginning.

However, the synthesis Berio uses is not a shared convention, which is why he borrows a cadence formula from tonal music, stressing the key pitches related to E, that is, A, B, and E (i.e., IV, V, and I). That explains why the upper B goes to E four times in systems five and six, suggesting a traditional cadence on E.

Figure 5 summarizes this borrowing. The A appears just before the E that concludes the chromatic saturation, and the B appears just before the E that is a confirmation. The simplification starts with four Bs followed by an E (an *appoggiatura*). Afterward, the B happens again, and the final E concludes the work. Note that the two last Bs are played with a D# in the bass, reinforcing the idea of a tonal cadence. This work is not tonal. However, it uses borrowing from tonal music to construct the simplification, and performers could stress these relations to make them more audible and more teleological.

Directionality (final part) ----- Simplification

The E concludes the chromatic saturation Confirmation The first figure of the work is synthesized in a chord (recapitulation) The E is confirmed twice, with a D# in the bass

Figure 5. *Brin* by Berio. Schematic representation of the final part of the directionality and simplification

3. Final comments

The results show that similarity, directionality, and simplification ideas explain musical intelligibility and teleology in traditional and contemporary music. The analysis of contemporary works confirms that intelligibility does not depend on motives and one single musical system to create unity and coherence. Instead, these are musical resources to express the fundamental ideas of similarity, directionality, and simplification at the musical surface level (foreground). The more these ideas are transparent at the surface level, the more a teleological result is perceptible. In the first ten measures of Schnittke's *String Quartet No. 3*, they are expressed at the surface level, making teleology more transparent. In addition, the excerpts selected to compose these ten first measures agree with the similarity, directionality, and simplification ideas, reinforcing them. This reinforcing is so strong that this excerpt may sound like one organic musical sentence instead of a polystylistic collage without a unifying motive and a uniform musical system. However, in Berio's work, directionality and simplification are not much at the surface level. As a result, teleology is less transparent. However, it is striking to see how the chromatic saturation technique matches the directionality, and the scheme of a tonal cadence (a borrowing) reinforces the conclusion in the simplification. Obviously, the expression of teleology at the surface level is not a criterion of musical quality.

Finally, musical figures, techniques, and conventions (like borrowings) can match similarity, directionality, and simplification ideas. These matchings can be seen as representations, like Beethoven's excerpt representing directionality in Schnittke's work. Representation in music is a complex issue, including different approaches (Delalande 1996, Tagg 2013, Tarasti 1994, Zamprona 2000). However, this is a promising research field to be better studied using similarity, directionality, and simplification ideas, opening new approaches to music studies inside multimodal contexts, including multimedia works and sound arts.

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Semiotinis muzikos teleologijos aiškinimas remiantis muzikos suvokimu

Santrauka

Pagrindinė straipsnio idėja – muzikos teleologija glūdi ne pačiame muzikos kūrinyje, o klausytojo sąmonėje, kai klausytojas transformuoja girdimus garsus į kažką, ką gali lengvai suvokti. Trumpai tariant, kai klausomės muzikos kūrinio, mes susiejame tai, ką girdime, su kažkuo mums gerai suprantamu, taip įnešdami idėjų, kurių nėra pačiuose muzikiniuose įvykiuose. Taigi pagrindinis šio tyrimo uždavinys yra identifikuoti tas idėjas. Peirce'o semiotika čia tampa pagrindiniu teoriniu atspirties tašku. Anot jo, šios idėjos iš viso yra trijų rūšių ir įvardija jas kaip *panašumą*, *kryptingumą* ir *supaprastinimą*. Sakydami, kad du ar daugiau muzikinių įvykių yra panašūs, mes sukuriame jungtis, kurios tuos įvykius sintezuoja ir padaro suprantamus. Sakydami, kad muzikiniai įvykiai turi tam tikrą kryptį ar reiškia kažką konkrečiau, mes juos kognityviai sujungiamo. Galiausiai, redukuodami muzikinius įvykius iki muzikinių konvencijų, mes taip pat paverčiame juos suvokiamais. Šiame kontekste *teleologiją* galime suvokti kaip tam tikrą supaprastinimą. Teleologija – tai tarsi galutinis tikslas, pritraukiantis prie savęs ankstesnius muzikinius įvykius. Tai yra tarsi atskaitos taškas, kuriuo remdamiesi mes galime protu suvokti tai, ką girdime.

Norėdami patikrinti, ar šios idėjos gali paaiškinti sudėtingesnius tonalios muzikos kūrinius, šiame straipsnyje analizuojame pirmąsias visų 32 Beethoveno fortepijoninių sonatų temas. Rezultatai rodo, jog, be kelių išimčių, visos temos sudaro muzikinį sakinį. Pažymėtinos dvi išimtys – tai 28-oji ir 30-oji sonatos. Tradicinės muzikos formos analizė jas paaiškina ganėtinai „negrabiai“ arba nepaaiškina apskritai. Tačiau panašumo, kryptingumo ir supaprastinimo idėjos, išplėsdamos tradicinę muzikos analizę, gali jas nesunkiai paaiškinti. Siekiant patikrinti, kaip tai pritaikoma netonaliame repertuare, analizuojamos dvi šiuolaikinės kompozicijos: Alfredo Schnittke'ės Styginių kvartetą Nr. 3 (dešimt pirmųjų taktų) ir Luciano Berio *Brin*. Schnittke'ės kūrinio ištrauka aiškiai rezonuoja su panašumo, kryptingumo ir supaprastinimo idėjomis, jos dar labiau sustiprinamos. Tas sustiprinimas yra toks galingas, jog visa ištrauka gali nuskambėti lyg vienas organiškas muzikinis sakinytis, o ne daugiastilistinė atkarpa be vienijančio motyvo ir bendros muzikinės sistemos. Berio kūrinyje matome įspūdingą chromatinės saturacijos technikos ir kryptingumo idėjos sutapimą, o tonalių kadencijų schema yra naudojama supaprastinimui, kad sustiprintų užbaigtumo pojūtį ir pačią teleologiją. Vis dėlto kadencijos neskamba tonaliai. Šią procedūrą galima vadinti *skolinimusi*. Tyrimo rezultatai byloja, jog panašumo, kryptingumo ir supaprastinimo idėjos gali paaiškinti muzikos suvokimą ir teleologiją tiek tradicinėje, tiek šiuolaikinėje muzikoje. Kartu atskleidžiama, jog suvokimas nėra tiesiogiai priklausomas nuo motyvų ir vienos muzikinės sistemos sukuriama koherentiškumo. Būtent *panašumas*, *kryptingumas* ir *supaprastinimas* paviršiniame muzikos lygmenyje sustiprina teleologijos suprantamumą.