



Cultural and economic value: a critical review

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Abstract

In this paper we present the state of the art concerning the distinction between economic and cultural value and the way the two values interact with each other. Our review espouses Klamer's idea of creating a value-based approach in economics, systematizing the literature on the economic and cultural value of cultural goods. In order to analyze the relationship between the artist's characteristics and the cultural goods' values, we also propose a model of how fame and talent affect the economic and cultural value of cultural goods. In particular, the artist's fame and talent and the cultural good's price are included in the dynamic formation process of economic and cultural values.

Keywords Cultural good · Cultural value · Economic value · Talent · Fame

JEL Classification Z11

1 Introduction

Recently, Klamer (2016b) pointed out the existence of a *hiatus* between the world of the arts and the academic studies on this topic and proposed the value-based approach as a way to reduce this gap. A first step toward putting this idea into action consists of identifying the values of a cultural good, that is, its economic and cultural value, through a survey of the contributions of cultural economists on this topic.

The relationship that exists between economic and cultural value is an open issue in the academic debate. Several scholars, such as Bonus and Ronte (1997), state that economic value encompasses cultural value; other researchers, such as Throsby (2001) and Hutter and Frey (2010), affirm that cultural value has an effect

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on economic value, but the two are separate. Some other scholars state that the two values can be evaluated independently: following Candela and Scorcu (2004), the economic value of a cultural good can be assessed in principle without taking into account its cultural value. On the other hand, as pointed out by Klamer (2004), since the evaluation of economic value makes sense only in the market, cultural value can be quantified outside of it.¹

Our work is a review of the burgeoning literature on the value of cultural goods, aimed at systematizing the different views of the scholars. In our paper we also suggest a possible solution of the above-mentioned open issue in the academic debate. In Sect. 2 we present a review of the cultural economics literature on economic and cultural value, shedding light on the several characterizations of these values proposed in the literature, and in Sect. 3 we report the links between these two values. In Sect. 4 we introduce the artist's and cultural good's observable characteristics, reviewing the related literature, and we explain their relationships and the dynamics of their formation processes. In Sect. 5 we conclude.

2 Cultural and economic value

There are several definitions of “cultural good” in the literature. For example, Throsby (2001) defines the three main characteristics that a cultural good should have in order to be called such: “that the activities concerned involve some form of creativity in their production, that they are concerned with the generation and communication of symbolic meaning, and that their output embodies, at least potentially, some form of intellectual property” (p. 4), while Klamer (2004) states that “[A cultural good] has cultural value in that it is a source of inspiration or symbol of distinction” (p. 138).

Defining the “value” of cultural goods, however, is a controversial issue, since these goods present both a cultural and an economic value. Moreover, there exists a consensus on how to evaluate the economic value of cultural goods, but the evaluation of their cultural value is still an open issue, which has recently been addressed by several cultural economists.² While there exists a common definition of the economic value of a cultural good, that is its exchange value or the value that “comprises any direct use values of the cultural good or service in question, plus whatever non-market values it may give rise to” (Throsby 2003, p. 279), there is no precise definition of cultural value in the literature, but several characterizations of its components.

Cultural value can be evaluated only by those who own a certain level of “cultural capital” or “educational capital,” such as experienced collectors, dealers, and critics

¹ See also Klamer (2016a).

² For an analysis of the evaluation methods of the economic value of cultural goods, see Throsby (2001), Snowball (2008), and Gergaud and Ginsburgh (2017). A recent approach based on happiness and well-being of the art users has been developed by Hand (2018), Del Saz-Salazar et al. (2017), and Wheatley and Bickerton (2017).

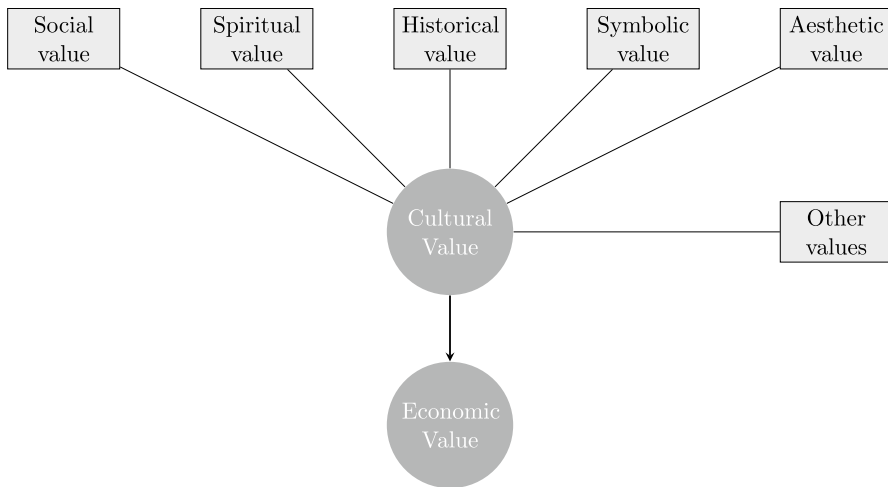


Fig. 1 Cultural goods' values and their relationships

(Seaman 2006). The latter have a key role in helping with the evaluation of the cultural value, since they spread information about something that is not fully observable. Their expertise, which is recognized in the market, is formed through a reputation-building mechanism, which may be based on a network system (Bonus and Ronte 1997) or on a “market of critics” (Cameron 1995). Greenfeld (1988) affirms that the reputation of a critic depends on the social context in which her or his reviews are considered, providing an example of the Israeli avant-garde versus traditional art markets. Wijnberg and Gemser (2000) and Velthuis (2012) describe the role of the critics in the art market, while Ginsburgh and van Ours (2003), Reinstein and Snyder (2005), Arora and Vermeylen (2013), Quemin and van Hest (2015), and Radermecker et al. (2017) analyze it empirically.

Among the early contributions to the analysis of cultural value in cultural economics is a work by Throsby (1990), in which the author addresses issues concerning the valuation and the measurement of the quality of a piece of art (in particular, a theater play). More recently, Throsby (2003, pp. 279–280) states that cultural value is “multi-dimensional, unstable, contested, lacks a common unit of account, and may contain elements that cannot be easily expressed according to any quantitative or qualitative scale,” and that it is made up of several values:³ the aesthetic value, that refers to “properties of beauty, harmony, form, and other aesthetic characteristics of the work”; the spiritual value, that is the value given to a work of art either because of its “significance to the members of a religious faith, tribe or other cultural grouping,” or its secular importance; the social value, that is the value linked to the sense of connection with others evoked by the artwork; the historical value, related to the way “it reflects the conditions of life at the time it was created”; the

³ See Throsby (2001, pp. 28–29).

symbolic value, which is linked to the capacity of the artwork to convey a particular meaning; the authenticity value, that is, the value that comes from the fact that the artwork is original. Figure 1 contains a graphical representation of Throsby's view. These sub-values are explicitly said to be only a part of the constituent elements of cultural value, although they can be considered the most important ones.

Throsby's decomposition of cultural value has been accepted, either implicitly or explicitly, in the cultural economics literature. For example, Hutter and Shusterman (2006) propose a decomposition which is very similar to the Throsby's one, calling some components of cultural value by different names: Throsby's spiritual value is called "moral/religious value," social value is called "social and political value," historical value comprehends both Hutter and Shusterman's "art-historical value" and "art cult value," and Throsby's symbolic value contains the "cognitive value," the value linked to "expressiveness," and the value linked to "communicative power." Also, Dekker (2014) lists some of the Throsby's (2001) components, such as the aesthetic, the social, and the historical values. Some additional components of cultural value are: the educational value (Throsby and Zednik 2014, p. 88) that can be "identified in terms of the works role in the education of children";⁴ the value linked to the importance of the good in influencing artistic trends (Throsby 2003, p. 280); the integrity of the work of art (Throsby 2003, p. 280); the experiential value (Hutter and Shusterman 2006, p. 198), that is, the "directly satisfying or pleasurable experience" given by the good; the art-technical value (Hutter and Shusterman 2006, p.199) which "relates to the skill, technique, or technical innovation displayed by an artwork."

Alternative views to Throsby's have been proposed in the literature, among which are the contributions by Klammer (2004, 2008), who highlights the presence of characteristics that are cultural goods-specific, linked to their ability of being "symbol of something," or their "artistic, aesthetic, or sacred qualities," which, however, are not considered to be components of cultural value by the author. Conversely, he states that an artistic good can be evaluated on the basis of three different, and mutually exclusive, values, that are:⁵ the economic value, "the value that refers to the prices of things, or their exchange value"; the social value, which operates "in the context of interpersonal relationships, groups, communities, and societies"; the cultural value, that comprises everything but social and economic values.

Also Smith (2008, pp. 36–38) presents an alternative view to Throsby's, introducing a completely new classification of artistic values, "each associated with the observable properties or the demonstrable effects of artworks." Specifically, these values are: the existent value, that comes from an evaluation which happens before the recognition of the object as a work of art and is based on the fact that art can be seen as the intensification of "the quality of being as appearance"; the representation value, linked to the capacity of the artwork to "bring into play an immediate set of qualities that make the work a secondary object"; the formative value, generated by the way the content of the work of art is made; the insight/idea value, which "refers

⁴ See also Snowball (2011).

⁵ See Klammer (2004, pp. 147–150).

to the content of the work of art, what it is about, the idea in it, the way it shows the world to us, the perceptiveness of it,” so, as pointed out by Smith (2008), this value contains what Throsby calls social, historical, spiritual, and symbolic value, but it is not only a “consumption value,” but also a “production value,” in the sense that ideas emerge through art (be it visual, performative, or music); the transformative value, the deep differential, which is specific to “exceptional work of art, the one that redefines its type, redefines its practice, redefines art as such, and redefines culture.”

More recently, Hernando and Campo (2017) present an alternative characterization of value and its components in the art market, based on the literature from both economics and marketing, but also from other fields, such as psychology, art history, philosophy, and sociology. The authors distinguish between four components of value in the art market, that in turn can be made up of different components: the hedonistic value, the economic value, the social-symbolic value, and the artwork brand value. In particular, the hedonistic value includes the aesthetic value, the emotional value, the ownership value, and the cognitive value. The economic value consists of the investment value and the value linked to its characteristic of being a “good legacy” for future generations, the value attributed by prescribers, that is, the experts, and the scientific value, linked to the authenticity and the origin of the artwork. Finally, the social-symbolic value is linked to the status conferred by the ownership of the artwork. The scale of value introduced by Hernando and Campo (2017), and then empirically tested through qualitative and quantitative data, is centered around the concept of perception and hence appears to vary depending on the individual considered in the evaluation. Although Throsby’s and Klammer’s views seem to be more objective, this does not mean that the components of cultural value introduced by these authors are perceived in the same way by each individual.

3 The relationships between cultural and economic value

As we introduced in Sect. 1, the relationship between economic and cultural value is an open issue: for several scholars economic value encompasses cultural value, for others cultural value and economic value are separate even though cultural value has an effect on economic value, while for other researchers the two values can be evaluated independently.

One of the first contributions to the analysis of the cultural versus economic value issue was the book by Klammer (1996), “The Value of Culture,” in which the author collected a series of works by various scholars, ranging from economics to philosophy, anthropology, and sociology. Bonus and Ronte (1997, p. 104) highlight the particular feature of the quality of an artwork of not being judged objectively, stating that “there is no way to establish the quality of a certain picture or oeuvre.” The issue of the quality evaluation of an artwork has been addressed by Ginsburgh and Weyers (1999), suggesting to decompose the work of art into “quantifiable

characteristics” and applying their technique to the movies industry.⁶ More recently, the same authors (Ginsburgh and Weyers 2008b) reprise the evaluation of the beauty of a work of art, identifying three “types of beauty” that can be evaluated and measured using tools of economic analysis. Also Candela and Scorcu (2004) addressed the cultural versus economic value issue, calling the former “artistic merit”: the idea is that the same object can be recognized to have artistic merit (that is, a cultural value) depending on how it is perceived by the public, the experts, or some other group of influence. There exists a relationship between artistic merit and economic value, although the evaluation of the economic value of the object can be made also without considering its artistic merit.⁷ This distinction, however, is not easy to make, since the two values are strongly correlated, and in some cases it is hard to value an object only based on its artistic merit or economic value. McCain (2006) distinguishes between economic and non-economic values. In particular, he reviews a series of works on the concept of value, both from economics and from non-economics fields. In his essay, the author identifies three main values a work of art can have: the economic value, the cultural value, and the artistic value, admitting the possibility of an overlap between the last two values. Velthuis (2007) recognizes two approaches in the literature to the distinction between economic and cultural value inside cultural goods’ markets: the “hostile worlds” approach, which focuses on the idea that comparing art creation and diffusion with the logic of the market is detrimental for the artistic world, and the “nothing but” approach, according to which the economic value can encompass cultural value, that is, the two markets in the art market (the artistic value’s market and the economic value’s market) can be reduced to a single market. Velthuis’s view, however, is that the two worlds cannot be divided and, in particular, that nowadays one cannot evaluate the artistic merit of an artwork without taking into consideration its economic value, which is the opposite of what Van den Braembussche (1996, p. 33) points out, that is, that “[O]ne can value a work of art without being in a position to buy it.” A recent work that reprises the issue of the relationship between the cultural and the economic value of artistic goods is the one by Hutter and Frey (2010), in which the authors affirm that cultural value has an effect on the economic value of artistic goods, providing various examples to support their thesis. Specifically, they analyze the effect of certain components of cultural value on the artworks’ price, the best indicator of economic value (Throsby 2001), implicitly recognizing a time effect on price dynamics. In particular, even though the authors do not use Throsby’s classification explicitly, they still refer to the authenticity value in the Raffaello Sanzio’s “Madonna of the Pinks” and

⁶ Another empirical investigation on the quality assessment is the one presented by Chossat and Gergaud (2003), which uses the experts official judgments to quantify the quality of gastronomy. Tobias (2004) uses the relationship between the experts opinion in the performing arts as a proxy for the quality and the economic variable, such as production costs.

⁷ The authors take the artwork “*Ballet français*” by Man Ray as an example, pointing out that one could extrapolate the artistic merit of the object and consider only its economic value linked to its value as a broom.

Rembrandt's "Man in a Golden Helmet" cases,⁸ and to the symbolic value together with the historical value in the Pollock's "Number 12, 1949" case.

Besides the classifications of value presented above, other classifications have been proposed in the literature, such as the distinction between vertical and horizontal qualities of a good (Ginsburgh and Weyers 2008b), with the former being the ones every consumer prefers to have more of, and the latter being all the other qualities; this distinction can be called the Lancaster's view of the value. Throsby (1990) introduces the concepts of objective and subjective value, distinguishing between those characteristics a customer might create an objective scale of, those that depend on subjective interpretation but whose consensus can be predicted among a majority of people, and those based on subjective assessments and without predictable consensus. Collective value (the cultural value an individual can recognize as benefiting others) and individualistic value (the value that comes from the individual interpretation that is effective for himself or herself only) have been described in Throsby (2001) and Throsby and Zednik (2014). Van den Braembussche (1996) and McCain (2006) define the intrinsic and extrinsic value, agreeing on the fact that economic value is extrinsic, while the other values are intrinsic in the sense that they depend on individual preferences. Finally, Candela and Castellani (2000) distinguish between static and dynamic value, stating that ideas as well as values can evolve over time (the dynamic ones, like, for example, the historical value of an artwork) or they can remain stable (the static ones, such as the classical beauty, which is part of aesthetic value).

The concept of dynamic value can be considered also as an explanation of how the value itself is formed, through a process of growth/decline which occurs thanks to the exchange and the interaction between the individuals of the population of a certain "society": Dekker (2014) calls it "societal value," which is not Throsby's social value. In fact, the idea behind this value is that there is some kind of value-, canon-, consensus-formation, in a process in which the exchange of points of view is crucial, that is, cultural value is a dynamic value. In Klammer's words (2008), cultural goods are "discursive constructs" and their values are established through conversation. So, value is formed thanks to an institution which works through the action of social forces. Although none of the authors cited above defines value explicitly, several of them indirectly describe its development.⁹ De Marchi (2008) goes further in delineating this formation process, stating that the exchange of points of view which is at the base of the formation of cultural value is supported by the market.¹⁰ In the value-formation process through the market, an important role is played by experts,

⁸ The importance of this value has been pointed out, later, also by Candela et al. (2009), studying the case of ethnic art, and by Radermecker et al. (2017), in an analysis of the influence of critics on market price.

⁹ See Bonus and Ronte (1997), Candela and Castellani (2000), Velthuis (2003), Candela and Scorcu (2004), McCain (2006), Hutter and Shusterman (2006), Hutter and Frey (2010), and Throsby and Zednik (2014), among the others.

¹⁰ The "social production of art" has been extensively studied in sociology, indeed, with focus on the importance of consensus on the value of cultural characteristics, on the difficulty in attaching value to a cultural good, and on the effect of the markets on the creation of cultural value. See, for example, Wolff (1981).

critics, dealers, and, in general, every individual that may influence the uninformed collectors about the components of cultural value they are not able to evaluate by themselves (Cameron 1995).

4 The artist and the value of artworks

The framework depicted in Fig. 1 can be expanded introducing the cultural good's price and the artist's characteristics, and the relationship that exists between them. The former is an observable variable which is directly generated by economic value, acting as a noisy signal of economic value itself (Throsby 2001). Cultural economics literature studied price-formation mechanisms in the art market, focusing mainly on the secondary market.¹¹ Several scholars studied also the formation of primary market price, both quantitatively, such as Rengers and Velthuis (2002), Beckert and Rössel (2004), Hutter et al. (2007), Schönfeld and Reinstaller (2007), and Angelini and Castellani (forthcoming), and qualitatively, such as Velthuis (2002, 2003, 2007, 2011), or using a descriptive approach, such as Peterson (1997), Kawashima (1999), Benhamou et al. (2002), and Caves (2003).¹²

The artist's characteristics that we want to analyze are talent and fame, which have not been considered yet in the literature as determinant of the cultural goods' values, except in Angelini and Castellani (2018). Since the seminal works on talent and fame by Rosen (1981) and Adler (1985), the definition of these artist's characteristics is well-known among cultural economists. While the artist's talent has been considered as an innate creative ability (Towse 2006), fame refers to the reputation concept and is related to the public information shared by the audience about the artist's identity. The former is a static concept, since it cannot be modified in time either by the artist or by anyone else, while the latter is a typical dynamic characteristic, because it is influenced by the market's reaction to everything that concerns the artist's life. For example, the death of an artist has been found to affect her fame (Candela et al. 2016), but only if she is not too young (Ursprung and Wiermann 2011). At the same time, the artist's choice of appearing in a magazine could work as a signal of her popularity that could be perceived and processed by the audience and affect her reputation (Adler 2006). In other words, also fame is a societal value. Fame has been widely studied in the literature, using both a theoretical approach (Rosen 1981; Adler 1985; MacDonald 1988; Chung and Cox 1994; Borghans and Groot 1999; Baumol and Throsby 2012; Champarnaud 2014) and an empirical approach (Filimon et al. 2011; Candela et al. 2016; Oosterlinck and Radermecker 2018), with applications to the music industry (Chung and Cox 1994; Cox and

¹¹ For an introduction of this topic, see Ginsburgh and Throsby (2014).

¹² Besides price formation, also the construction of price indices is a widely studied topic in cultural economics. See, for example, Reitlinger (1963, 1970), Anderson (1974), Goetzmann (1993), Pesando and Shum (1999), Ginsburgh and Jeanfils (1995), Frey and Pommerenhe (1989), Buelens and Ginsburgh (1993), Chanel (1995), Stein (1977), Candela and Scorcu (1997), Candela et al. (2004), Agnello and Pierce (1996), Flôres et al. (1999), Hellmanzik (2009), Scorcu and Zanola (2011), Kräussl et al. (2016), Angelini (2017), Vecco and Zanola (2017), and Assaf (2018).

Felton 1995; Crain and Tollison 2002; Fox and Kochanowski 2004; Hamlen 1991, 1994; Krueger 2005), sport industry (Lucifora and Simmons 2003; Lehmann and Schulze 2008; Franck and Nüesch 2008, 2012; Bryson et al. 2014; Humphreys and Johnson 2017), film industry (Pokorny and Sedgwick 2001; Jansen 2005), and gastronomy industry (Ehrmann et al. 2009).¹³ However, this does not mean that talent cannot have different effects on cultural value in different periods of time, since there could be a change in how society considers certain components of cultural value (Menger 2014).¹⁴

Following Angelini and Castellani (2018), the role played by fame and talent in the formation of value is different: fame directly affects the economic value of the cultural good, through what could also be called a “brand effect” (Schroeder 2005; Zorloni 2005; Muñoz Jr. et al. 2014; Preece and Kerrigan 2015), that is, the positive (or negative) effect of the artist’s name on the economic value of her work. Artist’s talent, instead, has an effect on some of the components of cultural value, such as aesthetic value and art-technical value, through her personal stylistic choices.¹⁵ While talent is an innate attribute, fame has its own formation process, which depends on the appreciation received by the collectors and critics (Ginsburgh 2003; Beckert and Rössel 2013), on the ability of the artist to promote himself (Velthuis 2011, 2012), on the popularity of the artistic movement the artist is part of (Lang and Lang 1988), on the type of style promoted by art fairs, galleries, and other sellers (Baia Curioni et al. 2015), and on the addiction/learning-by-consuming effect of the consumers (Lévy-Garboua and Montmarquette 1996; Blaug 2001; Ateca-Amestoy 2007; Seaman 2006; Zakaras and Lowell 2008). The dynamics of fame can be driven by the formation of an artistic canon, as pointed out by Ginsburgh and Weyers (2006, 2008a, 2010), Teichgraeber III (2008), and Vermeylen et al. (2013). However, the most common approach to modeling the dynamic process of formation is not causal but random, by using a stochastic process of fame formation, such as MacDonald (1988), Chung and Cox (1994), and Champarnaud (2014); these approaches do not explain which are the determinants of the process, but instead they model it as a random accumulation of fame.

Obviously, another effect on fame formation is the one that goes from price to fame: for example, an artist whose artworks’ prices reach record high will obtain media coverage and be recognized as popular by collectors, even by the less sophisticated and informed ones. So talent indirectly affects fame, through this dynamic price effect, potentially generating a virtuous circle and, therefore, the access to superstar status.

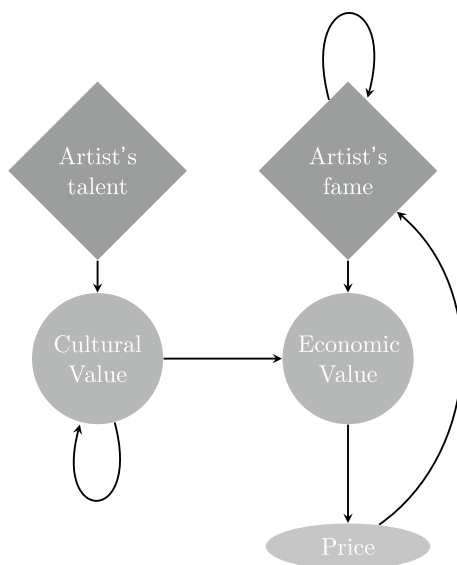
Figure 2 integrates the framework represented in Fig. 1 by adding the above-mentioned artist-specific characteristics (fame and talent, in the diamond-shaped nodes) and their links to the cultural good-specific characteristics, both the latent ones (cultural and economic values, in the circle-shaped nodes) and the observable

¹³ See Adler (2006) for a review of stardom in economics literature.

¹⁴ For a recent survey on talent and its definitions, see Table 1 in Menger (2018).

¹⁵ Consider that the art-technical ability could depend also on the human capital accumulated by the artist throughout the art school years or the art training courses, in case she attended any (Towse 2006; Menger 2014).

Fig. 2 Cultural goods' values and characteristics, artist's characteristics, and their static and dynamic relationships



one (price, in the ellipse-shaped node). So, the artist's talent directly affects cultural value, through its effect on some of its components (Fig. 1), like, for example, art-technical value and aesthetic value. At the same time, cultural value can change because of the societal formation mechanism of some of its components, such as social value, which needs time and interaction between individuals to be formed, together with the contribution of critics and their assessment of some of its components, such as the authenticity and the art-technical value. Cultural value is then dynamic and its formation is self-reinforcing, in that a discourse on a cultural good forming its cultural value could push other people to search information about it. Cultural value reflects on economic value of the good, together with the effects of the artist's fame: the formation of fame is dynamic as well, through a series of potential effects that can change this characteristic, as well as the price, a noisy signal of economic value, that could either increase or decrease fame.¹⁶

5 Summary and conclusions

The controversy over the economic and cultural value of cultural goods is still an open issue in the literature of cultural economics. In order to shed light on the relationship between these two concepts of value, in this paper we present a critical review of the existing literature and propose a possible solution of this issue.

¹⁶ A mathematical representation of the dynamic relationships between the variables in Fig. 2 is depicted in Appendix.

Following the seminal approach of Throsby (2001), in Fig. 1 we present the state of the art concerning the causal relationship between latent characteristics of the cultural good and their components: economic value and cultural value. The latter is also decomposed into social, spiritual, historical, symbolic, aesthetic, and other values (educational value, art-technical value, etc.). This review espouses Klamer's idea (2016a, b) of creating a value-based approach in economics, systematizing the literature on the economic and cultural value of cultural goods.

Providing a new interpretation of the dynamic aspects of cultural and economic value, following Angelini (2017), we present a potential development of this topic. In particular, in Fig. 2 the artist's characteristics, fame and talent, and the cultural good's price are included in the formation process of economic and cultural values. Artist's talent, a static variable, affects cultural value, which is dynamic in that it can change over time as collectors' and critics' assessment changes. In turn, cultural value has an effect on economic value. At the same time, the artist's fame, a dynamic variable, affects the economic value as well, that in turn determines the price of the cultural good. Finally, the price may have a feedback on the artist's fame, that could be either positive or negative.

In order to identify the magnitude of the effect we hypothesize, a potential empirical test can be performed by using a structural equation approach. Since some of the variables in our model are latent, the collection of the data is an open challenge. However, this estimation is beyond the scope of this paper and we leave it for future research.

The construction of a theoretical dynamic model is a challenge for cultural economists, that adds to the series of challenges posed by Blaug (2001), and could help in understanding the cultural and economic value relationship. Our work represents a potential benchmark over which one could lay the foundation for theoretical and empirical economic models on this topic.

Compliance with ethical standards

Conflict of interest This study was not funded, and the authors declare that they have no conflict of interest.

Appendix: A mathematical model

The framework in Fig. 2 can be represented by using an analytical model, which would consider the dynamics of the variables and the relationships among them.

We define τ and ϕ , respectively, as the artist's talent and fame, and CV , EV , and p , respectively, as the artwork's cultural value, economic value, and price. Assuming a discrete timing, we can represent the framework described in our paper by using the following system of equations:

$$\begin{aligned} CV_t &= f(\tau, CV_{t-1}) \\ \phi_t &= s(\phi_{t-1}, p_{t-1}) \\ EV_t &= h(CV_t, \phi_t) \\ p_t &= n(EV_t), \end{aligned}$$

where t represents the current period of time.

Given the structure of equations of the model, the artwork's cultural value in t is influenced by the artist's talent, which has no subscript since it is time-invariant, and by the cultural value of all the periods before t (since the cultural value in $t - 1$ is influenced by the cultural value in $t - 2$, and so on), because of both exchange and interaction between the individuals and critics' assessment, as we have seen in Sect. 3. The artwork's cultural value in t affects the economic value in t , which is also influenced by the artist's fame ϕ in t . The artist's fame in the current period is influenced both by the fame in all the previous periods, and by the price in $t - 1$. Finally, price in t is influenced by the economic value in the same period.

The potential presence of exogenous shocks could be taken into account by letting the functional forms to be time-variant, for example by adding a random shock with a distribution to be chosen, possibly based on empirical observation. The variable which is most likely to be affected by exogenous shocks is the artist's fame, since it could also change because of actions that she did not do. Also cultural value could be sensitive to exogenous shocks, since its components could change in value because of several reasons.

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