Comparing Artistic Values The Example of Movies¹

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Abstract

Analytic art philosophers suggest that artworks carry independently valuable properties that can be rated. However, they point out that since these properties are incommensurable, one cannot infer the overall value of works in order to compare them. We show how weights can be retrieved from observations in which art critics or experts rate properties, as well as the overall value of works. This will also make clear that experts do indeed implicitly use such weights. We illustrate the idea using movies for which we do observe both a rating of total value and the ratings of a certain number of properties, focusing on the 270 movies, both nominated and having been awarded the Oscar for "Best Picture" between 1950 and 2003.

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1. Introduction

Monroe Beardsley (1958), Bruce Vermazen (1975), and George Dickie (1988, chapter 9) suggest that artworks carry independently valuable properties that can be rated. However, they point out that since these properties are incommensurable, one cannot infer the overall value of works in order to compare them. To simplify the discussion, we restrict our attention to works that share the same properties, and show, using a very simple example, that this is not a sufficient condition to rank works. Assume that we want to do so for two works *a* and *b* endowed with three identical properties. Following Dickie, we denote by A, B and C the three properties, and by the numbers 1, 2 and 3 the ranks of the properties in each work. (A3, B1, C1) is a work with rank 3 (the highest) in property A and rank 1 (the lowest) in B and C. Consider the situation in which work *a* is rated (A3, B1, C1), while work *b* is rated (A1, B3, C2). If the properties are incommensurable, the two works cannot be compared.

Dickie suggests to construct matrices that allow comparisons with respect to a given work, say *a*, as long as the works to which *a* is compared have more of one property, and not less of any other, or less of one property and not more of any other. For example, work *a* endowed with properties (A1, B2, C3) is better than the five works that are located below *a*, and worse than those located above *a* in the following matrix (see Dickie, 1988, pp. 167 and ff.):

	(A3, B3, C3)
	(A3, B2, C3)--(A2, B3, C3)
	(A2, B2, C3)--(A1, B3, C3)
work <i>a</i>	(A1, B2, C3)
	(A1, B2, C2)--(A1, B1, C3)
	(A1, B2, C1)--(A1, B1, C2)
	(A1, B1, C1)

Such a matrix contains only a partial ordering of works, but not a complete ordering, since we can not decide whether a work with rates (A2, B3, C1) is overall better or worse than *a*.

Dickie (1988, p. 180) claims that "there is no better way or even any other way at all to arrive at reasonable specific evaluations," and recognizes that critics do indeed rely on such (partial) orderings, though their evaluation is intuitive, and made without any formal construction of the matrices that he describes.

In this discussion, Dickie and Vermazen never mention that if properties could be ranked according to their order of importance (lexicographic ordering), then an overall value can be computed. The "most important" property is looked at first and works are ordered according to the rates of this first property. In case of ties in the

first property, one orders according to the rates of the second property, etc. For example, if property A is always "more important" than property B, that is itself more important than C, then work *a* rated (A3, B1, C1) would be overall more valuable than work *b* rated (A2, ., .) or (A1, ., .), where the rating of properties B and C can be 3, 2 or 1.

Another obvious scheme is to give equal weights to all properties, so that the overall value results from the mere addition of individual ratings. But one can imagine more subtle weighting schemes, and, if art critics are able to decompose works into properties, to rate each property for each work, then they should also be able to weigh the properties and obtain an overall value, even if this last step is informal. This is so when students are rated on the basis of several exams, in musical and other artistic competitions, and in some sports such as figure skating, diving, or gymnastics.

The idea of describing artworks by properties is not fully new. In his *Balance des Peintres*, the French art critic and historian Roger de Piles (1635-1709)² rated Renaissance and Baroque painters according to a point system on four properties: drawing, color, composition and expression. Jonathan Richardson (1719) adds three more properties to those of de Piles: grace and greatness, invention and handling. This is very close to the idea expressed by economists, in particular, Kevin Lancaster (1966), according to whom a commodity can be thought of as a bundle of characteristics (or properties), purchased by consumers for the overall value it provides. Since there are no markets for characteristics, these cannot be bought but are combined by consumers to construct their preferred choices. Therefore producers (and artists) make these choices for them, and consumers choose the commodity (or the work) that provides the combination they find closest to their preferred combination.

We show how weights can be retrieved from observations in which art critics or experts rate properties, as well as the overall value of works. This will also make clear that experts do indeed implicitly use such weights.

Once weights are available, the overall value of a work can be obtained by a weighted sum of the values of all the properties embodied in the work (such as actor and script for a movie, or composition and drawing for a painter). If work *i* can be fully described by say, three properties its total value V_i is simply:

$$V_i = \beta_1 x_{1i} + \beta_2 x_{2i} + \beta_3 x_{3i},$$

where the x_{ki} represent the rates of the three properties, and the β_k are weights.

² The *Balance des Peintres* appears as an appendix in Roger De Piles (1708).

2. Method

We illustrate the idea using movies for which we do observe both a rating of total value V and the ratings of a certain number of properties, focusing on the 270 movies, both nominated and having been awarded the Oscar for "Best Picture" by the Academy of Motion Picture Arts and Sciences between 1950 and 2003.³ In each year, five movies are nominated by the Academy and one of these wins the race ("...and the winner is..."). For each such movie, we also collected all other nominations and distinctions given by the Academy for a certain number of properties: actor in a leading role, actress in a leading role, director, screenplay, etc. See Appendix for the full set of properties. The properties that seem to matter for motion pictures may look quite different from the much more general and abstract ones such as unity, intensity and complexity, postulated by Beardsley for example, but there is no reason to think that they contradict each other.

Our work is very closely related to Simonton's (2002, 2004a, 2004b), who uses a similar method to gauge the impact of the film components on Oscars and other awards, such as the National Board of Review, or the Hollywood Foreign Press Association. His objective is, however, very different from ours. We try to provide some insight on how to go from the evaluation of individual characteristics of a work to its overall evaluation, which would make it possible to order works according to their aesthetic value. Simonton is interested in the result of collective creation, for which movies are a perfect example.

The data consist of rates of the overall value and rates for each property: V , the overall value, is dichotomous, with value 1 if the movie was awarded the Oscar for Best Picture, and 0 if it was nominated but failed the Oscar.⁴ Each property (say "actor in a leading role") can fall into one of three categories: the movie was awarded the Oscar, or it was nominated, but failed getting the Oscar, or it was not nominated. A movie is thus represented by an array of numbers, the first of which is V (1 or 0) while the other are variables that also take values 1 or 0 according to whether they fall or not into one of the categories.⁵

³ The data are available on <http://awards.fennec.org>.

⁴ We ignore here all the movies produced in any given year, that were not nominated as best pictures by the Academy.

⁵ There will for instance be three variables for "Screenplay:" the first takes the value "one" if the movie was awarded the Oscar, and "zero" otherwise, the second takes the value "one" if the movie was only nominated, and "zero" otherwise, the third takes the value "one" if the movie was not selected, and "zero" otherwise. Simonton (2002) gives a value 2 if the movie received the Oscar, 1 if it was nominated, and 0 if no recognition was granted. This restricts the dependence of the total value to be linear in the value of the characteristic "Screenplay. "

3. Results

We start with the example of Table 1 which displays the rates that four movies (*All About Eve*, produced in 1950, *An American in Paris*, and *A Streetcar Named Desire* both produced in 1951, and *Cabaret*, produced in 1972) were given on the various properties. We omit for some time the overall value (that is, whether they did or did not get the Oscar for best movie).

Is it possible to compare *All About Eve*, *An American in Paris* and *Cabaret*? The answer is negative if we follow Vermazen or Dickie, since, as can be checked, only a partial ordering can be constructed. Indeed, the first work does not worse than the second on 11 properties, but does worse on cinematography, art direction and score, while the second does not worse than the first on nine properties, but the first does better on five. Comparisons between the first and the third movies, and between the second and the third one lead to similar conclusions. Therefore, one has to conclude that no overall judgment is possible on the basis of individual properties. The total number of O (Oscar), N (nominated) and F (failed) ratings may help (*Cabaret* would be first, *All About Eve* second, and *An American in Paris* last), but this is not the result of the Academy's choices, since *Cabaret* was not awarded the Oscar for best picture, while the two others received it. One may argue that judges change their way of evaluating over time, which makes intertemporal (diachronic) comparisons impossible. Let us therefore compare two works produced during the same year, *An American in Paris* and *A Streetcar Named Desire*. Again, the partial ordering suggested above will be of no help, nor is the total number of O, N and F ratings.

[Table 1 here]

Suppose now that one could guess the weights that critics give to the various properties, and assume that these are: 0.67 if the movie gets the Oscar for Actor in a Leading Role, 2.34 for Director, 1.16 for Screenplay, 1.06 for Costume Design, 0.61 for Film Editing, and 0 for all other properties. Then it is easy to calculate the weighted average for both movies, which is $1.16+1.06$ for *An American in Paris* (Oscar for Direction with weight 1.16, plus Oscar for Costume Design with weight 1.06, no other Oscar with positive weight), and 0 for *A Streetcar* (no Oscar with positive weight), showing that the overall value is larger for *An American* than for *A Streetcar*. And *An American* was indeed awarded the Oscar for Best Picture in 1951.

The weights that were given above are not guesses, but are obtained from a probit regression of the total value V_i on the ratings x_{ki} of each property for each work i .

Before turning to the results, it is useful to describe briefly how movies are selected by the Academy (See <http://www.oscars.org/76academyawards/rules>). All eligible films are listed in a "reminder list of eligible releases," distributed to voters (active and life members of the Academy). Best picture nominees and awards are chosen by all Academy members, while nominations in other categories (acting, direction, screenplay, cinematography, art direction, costume design, music, film editing, sound mixing, special effects) are picked only by members of each discipline: only actors nominate actors, for example. Voting for nominations and awards are made by secret ballot. Five nominations at most can be made in each category, by each member who is allowed to nominate. There is thus a two-stage voting procedure. In the first stage, the five achievements in each category receiving the highest number of votes become the nominations in the second stage. This stage proceeds in the same way (by voting on the selection) and leads to the election of the winner. The two interesting characteristics are that both nominees and winners result from a voting procedure that includes a large number of movie experts (5,600 in 2003) and that only experts of the discipline choose the nominees of the discipline, while the Best Picture Oscar (overall value) is chosen by all the members of the Academy.

Estimation results are reproduced in Table 2. Since the number of observations is much smaller than the one used by Simonton (2002, 2004a, 2004b), we tried to find a model that was as parsimonious as possible in the number of properties used. Only five seem to matter: Leading Actor, Director, Screenplay, Costume Design and Film Editing. It is quite clear that some properties embody many other underlying characteristics, such as genre, violent or sexual content and MPAA (Motion Pictures Association of America) ratings, sequel status, release dates, etc. The reason for which the Oscar for Costume Design, for instance, appears as explaining the Oscar for Best Picture may be a sign of the magnificence or the exotic character of the production. We wanted to remain as close as possible to the properties selected by the Academy, and base our equation on these properties only. Our purpose is not to predict which movie will be given the Best Picture award,⁶ but to analyze whether the choices made by the members of the Academy are consistent, and thus whether the overall rate of a movie is obtained in a consistent way.

Table 2 displays the results concerning two equations, that include the same set of five properties, but that differ since Equation (1) includes the possibility that a nomination (without Oscar) can affect the overall value, while Equation (2) includes only Oscars. The results of Equation (1) show that a nomination without Oscar has no

⁶ Given the explanatory variables that we use, prediction is anyway not possible, since all the awards are announced during the same evening. Predicting Best Picture before the award ceremony takes place obviously needs another set of variables.

significant impact on the overall value. Only Oscars matter, which leads us to Equation (2).⁷

[Table 2 here]

Using the weights that appear in this equation, it is easy to calculate the overall value of a movie of which the properties have been valued. In Table 3, we do this for the four movies that were considered in Table 1. Their overall value is obtained by

$$V = \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5,$$

where the β are the weights and the various x_k take the value 1 when the Oscar was attributed to the property, and the value 0 otherwise. *All About Eve*, for example, was awarded Oscars for Direction (weight: 2.342), Screenplay (1.157) and Costume Design (1.059). Its overall value is equal to 4.558. Similar calculations can be made for the three other movies, leading to the overall values in the last row of the table. The values have not much meaning in absolute terms, but allow us to infer a complete ordering (ties are of course possible). In particular, they show why in 1951, *An American in Paris* was preferred to *A Streetcar Named Desire*.

[Table 3 here]

Given the special configuration, it is also possible to use the ordering method suggested by Dickie, though *Cabaret* has to be excluded, since it was awarded the Oscar for film editing, which is shared by none of the three other movies. Our methods allows a complete ordering, including *Cabaret*.

⁷ Note that this is at odds with some results obtained by Simonton in which nominations may carry more information than Oscars. This may be due to the fact that we only deal with movies that were nominated or received the Oscar for Best Picture, ignoring those that were nominated or received the Oscar in other categories, but failed to be nominated for Best Picture.

4. Discussion and Conclusions

An alternative to our very straightforward method is considered by Simonton (2004b) who groups the many Oscars into a smaller number of clusters. The factor analysis that he conducts leads him to consider four clusters that represent dramatic, visual, technical and musical effects. Not surprisingly, the five Oscars that are relevant in our analysis are those which have the largest factor loadings in two factors (dramatic and visual effects) that account for the larger part of the total variance (20 and 15 percent, respectively). Costume Design has the largest loading in the visual factor, which is consistent with our suggestion that this Oscar represents "magnificence" in the production. In our equation, we have no Oscar that is correlated with the technical and the musical factor, that account for a smaller part of the total variance (11 and 8 percent).

It is interesting to look at how this scheme does in "predicting" (in the sense that the right hand-side variables are used to compute the left hand-side one) whether a movie with specific properties is correctly rated. The number of correct predictions, using the weights displayed in Table 2, is 252, that is the weighting scheme predicts whether a movie will be awarded the Oscar or not, by just looking at the rating of the properties, in more than 93 percent (252/270) of the cases. A more careful look at the wrong predictions is needed here. Indeed, two types of errors are possible.

First, in a given year, the movie that is given the Best Picture Oscar may not be the one that is rated highest using our technique. For example, in 1951, *A Place in the Sun* and *An American in Paris* are rated 5.17 and 2.22, respectively; according to our method, the first movie should have been given the Oscar; the Academy rewarded the second one. Since in each of the 54 years (1950-2003) that we cover only one movie can be awarded the Oscar for Best Picture, there are 54 such movies. Using our weighting scheme, we can rank these and check where the errors are located. Table 4 shows that our method is in disagreement with the Academy decision in nine out of the 54 years. It may also be interesting to point out that the American movie critic Leonard Maltin (2003) agrees with the choice made by the Academy for 1951 and 1981, agrees with us (that is, rates our movie higher than the one which was awarded the Oscar) in 1952, 1956, 1989 and 2002, and ranks equally the two movies in 1972, 1998 and 2000.

[Table 4 here]

Second, the Best Picture Oscar is awarded every year. It may happen that all movies are poorly rated in some years, and that an Oscar is given to a movie that would not have deserved it had it been produced in an other year. It is difficult to predict whether *Gandhi* (Best Picture Oscar in 1982) or *Around the World in 80 Days*

(Best Picture Oscar in 1956) would have obtained the Oscar had they been produced during the same year. Therefore, an indirect way must be found to check whether those movies that were awarded the Oscar are also those that are ranked highest, irrespective of time. This can be looked at by ranking the movies in decreasing order of overall value. Table 5 shows that Best Picture Oscars were awarded to nine highest ranked movies, to 19 out of the first 20, to 27 out of the first 30, etc. Thus, if the choices according to the weighting method are right, the Academy missed one movie ranked among the top ten (and 20), three movies among the top 30 (and 40), etc. Only ten movies that are ranked worse than 50 and 6 movies that are ranked worse than 60 received the Best Picture Oscar. This illustrates that, even over time, there are few contradictions between what the Academy did, and what the overall rating based on properties does. But it also illustrates that in years in which all productions were poor, there was no reason to award the Best Picture Oscar.

[Table 5 here]

The method that was used makes it necessary to observe both the rating of properties and of the overall value. This may suggest that we are facing a circular reasoning: We need the overall value to predict it, and indeed, the "predictions" discussed above are predictions made on movies that were used to estimate the weights. It would be more interesting to predict what will happen in the coming years,⁸ and compare what the Academy did, and how the weighting method performs. This is of course possible once the weighting scheme has been made explicit. But more importantly, what we tried to show is that experts, here the members of the Academy of Motion Picture Arts and Sciences, use an implicit weighting scheme of individual properties to determine the overall value, that such implicit weights can be recovered, and used to "predict" the overall value of movies, and thus their ranks, once properties have been rated. The partial ordering that obtains using Dickie's suggestion would make such an overall ranking impossible.

⁸ The weighting equation also picks correctly, *Million Dollar Baby*, the movie which was awarded the 2004 Oscar for Best Picture, an out of sample observation. The movie is "worth" 2.342 (Oscar for Director). *Aviator* (Costume Design and Film Editing), *Sideways* (Adapted Screenplay), *Ray* (Actor in a Leading Role), and *Finding Neverland* (no Oscar among those selected in the equation) are worth 1.673, 1.157, 0.668 and 0 respectively.

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Table 1 An Example of Ratings for Four Movies

	<i>All About Eve (1950)</i>	<i>An American in Paris (1951)</i>	<i>Cabaret (1972)</i>	<i>A Streetcar Named Desire (1951)</i>
Actor in a Leading Role	F	F	F	N
Actress in a Leading Role	N	F	O	O
Actor in a Supporting Role	O	F	O	O
Actress in a Supporting Role	N	F	F	O
Director	O	N	O	N
Screenplay	O	O	N	N
Cinematography	N	O	O	N
Art Direction/Set Decoration	N	O	O	O
Costume Design	O	O	F	N
Score	N	O	O	N
Original Song	F	F	F	F
Film Editing	N	N	O	F
Sound Mixing	O	F	O	N
Special Effects	F	F	F	F
No. of "O" ratings	5	5	8	4
No. of "N" ratings	6	2	1	7
No. of "F" ratings	3	7	5	3

O: the movie was awarded the Oscar; N: the movie was nominated, but failed to receive the Oscar; F: the movie was not nominated.

Table 2 Probit Regression Results

	Equation (1)		Equation (2)	
	Coeff.	St. error	Coeff.	St. error
<i>Oscar for Actor in a Leading Role</i>				
Nominated	-0.210	(0.367)		
Awarded	0.611	(0.416)	0.668*	(0.357)
<i>Oscar for Director</i>				
Nominated	0.153	(0.571)		
Awarded	2.528**	(0.586)	2.342**	(0.318)
<i>Oscar for Screenplay</i>				
Nominated	0.415	(0.710)		
Awarded	1.437**	(0.691)	1.157**	(0.301)
<i>Oscar for Costume Design</i>				
Nominated	0.599	(0.370)		
Awarded	1.279**	(0.407)	1.059**	(0.341)
<i>Oscar for Film Editing</i>				
Nominated	0.672	(0.423)		
Awarded	1.132**	(0.456)	0.614*	(0.337)
R-square	0.701		0.678	
Number of Movies	270		270	

** = significantly different from 0 at the 5% level; * = significantly different from 0 at the 10% level.

Table 3 Rating the Overall Value for Four Movies

	Weights	<i>All About Eve (1950)</i>	<i>An American in Paris (1951)</i>	<i>Cabaret (1972)</i>	<i>A Streetcar Named Desire (1951)</i>
Actor in a Leading Role	0.668	-	-	-	-
Director	2.342	O	-	O	-
Screenplay	1.157	O	O	-	-
Costume Design	1.059	O	O	-	-
Film Editing	0.614	-	-	O	-
Overall value		4.558	2.216	2.956	0.000

An O indicates that the movie was awarded the Oscar for this property.

**Table 4 Overall Rating Differences Between the Academy
and the Weighting Method Year by Year**

Year	Received the Oscar	Oscar if weights are used
1951	An American in Paris (2.22)	A Place in the Sun (5.17)
1952	The Greatest Show on Earth (1.16)	The Quiet Man (2.34)
1956	Around the World in 80 Days (1.77)	Giant (2.34)
1972	The Godfather (1.82)	Cabaret (2.96)
1981	Chariots of Fire (2.22)	Reds (2.34)
1989	Driving Miss Daisy (1.16)	Born on the Fourth of July (2.96)
1998	Shakespeare in Love (2.22)	Saving Private Ryan (2.96)
2000	Gladiator (1.73)	Traffic (4.11)
2002	Chicago (1.67)	The Pianist (4.17)

Rates obtained by the weighted sum of properties, using the weights in Table 2, are given between brackets.

**Table 5 Overall Rating Differences Between the Academy
and the Weighting Method over Time**

Ranks	Number of Oscars
First 10	9
First 20	19
First 30	27
First 40	37
First 50	44
First 60	48
First 70	49
First 80	52
First 83	54

Appendix. Properties of Movies

The Academy of Motion Picture Arts and Sciences attributes Oscars for a certain number of categories, characteristics or properties. Their number and denominations have undergone some (relatively minor) changes between 1950 and 2003. The Academy did, for instance, award Oscars for "cinematography-black and white" and "Cinematography-color" until 1966. Since 1967, there is only one such award, called "Cinematography." Sometimes the denominations and/or the number of categories for similar properties were changed. Until 1955, for example, there were three awards for screenplay: "Screenplay," "Story and screenplay," and "Motion picture story." Since 1956, only two categories remain: "Adapted screenplay," and "Original screenplay." The following features were considered in 2003 (dates and possible changes are mentioned between brackets).

- (1) (Best) Picture (1950-2003);
- (2) Actor in a Leading Role (1950-2003);
- (3) Actress in a Leading Role (1950-2003);
- (4) Actor in a Supporting Role (1950-2003);
- (5) Actress in a Supporting Role (1950-2003);
- (6) Director (1950-2003, sometimes denominated "Art Director");
- (7) Adapted Screenplay (1956-2003, sometimes denominated "Screenplay Based on Material from Another Medium");
- (8) Original Screenplay (1956-2003, sometimes denominated "Story and Screenplay Written Directly for the Screen"; the Academy awarded three Oscars until 1955: "Screenplay," "Story and Screenplay," and "Motion Picture Story." There was also an Oscar for "Motion Picture Story" in 1956);
- (9) Cinematography (2 Oscars until 1966, "black and white" and "color," except in 1957 where there was a unique Oscar for both);
- (10) Art Direction/Set Decoration (2 Oscars until 1966, "black and white" and "color," except in 1957 and 1958 where there was a unique Oscar for both);
- (11) Costume Design (2 Oscars until 1966, "black and white" and "color," except in 1957 and 1958 where there was a unique Oscar for both);
- (12) Original Score (several categories appearing and disappearing according to circumstances, for dramatic score, comedy or musical);
- (13) Original Song (1950-2003);
- (14) Film Editing (1950-2003);
- (15) Sound Mixing (denominated "Sound Recording" until 1957, "Sound" between 1957 and 2002);
- (16) Visual Effects (since 1963; there existed only one category "Special Effects" until 1962);

- (17) Sound Editing (there existed only one category "Special Effects" until 1962; "Sound Editing" was denominated "Sound Effects" between 1963 and 1967, dropped between 1968 and 1974, reinstalled as such in 1975 and 1977, denominated "Sound Effects Editing" or "Sound Editing" since 1981; both "Sound Effects" and "Sound Effect Editing" in 1977);
- (18) Make-Up (in 1964, 1968, 1981, 1982 and every year since 1984);
- (19) In 1961 and 1968, Oscars for "Dance Direction" was awarded.

Given the changes, the fact that some Oscars are recent, and some disappeared, we consider the following categories which are present in one form or another between 1950 and 2003: (1), (2), (3), (4), (5), (6), (7)+(8), (9), (10), (11), (12), (13), (14), (15), and (16)+(17). "Black and White" and "Color," present until 1966, were put in a unique category; so were "Adapted" and "Original Screenplays," all possible denominations for "Scores," as well as "Visual" and "Sound Effects or Editing." "Make-up" and "Dance Direction" were dropped since the first appeared only sporadically until 1984, and the second was awarded only twice.