

# Evaluation Technologies in the Sphere of the Circulation of Art Objects

## (History of Assessing the Market Value of a Russian Painting)

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### ABSTRACT

The article deals with the problems of the domestic and foreign market of objects of art as objects of national heritage. The structure of the sphere of circulation of art objects is shown, participants and agents of the art values market are described. Particular attention is paid to the activities of world auction houses and galleries. Methodical approaches are specified and methods for estimating the market value of art objects, including objects of painting, are listed. The article illustrates the authors' attempt to evaluate the cost of the most mystical pictorial canvas in the history of the national museum science "Ivan the Terrible and his son Ivan" by the famous Russian artist I. E. Repin. The picture with a tragic-psychological plot was twice attacked by vandals with an interval of a hundred years and experienced a long-term costly restoration, even with not quite successful attraction of the author of this work.

**Keywords:** appraisal activity, sphere of circulation, art object, pictorial canvas, market value, expertise, attribution, analysis of hierarchies, criterion of significance, national wealth, insurance value

## Оценочные технологии в сфере обращения предметов искусства (история оценки рыночной стоимости одной русской картины)

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### РЕФЕРАТ

В статье рассматриваются проблемы отечественного и зарубежного рынка предметов искусства как объектов национального достояния. Показана структура сферы обращения предметов искусства, описаны участники и агенты рынка художественных ценностей. Особое внимание уделено деятельности мировых аукционных домов и галерей. Уточнены методические подходы и перечислены методы оценки рыночной стоимости предметов искусства в том числе объектов живописи. В статье проиллюстрирована попытка авторов оценить по малоизвестным методикам и техникам стоимость самого мистического живописного полотна в истории российского музееведения «Иван Грозный и сын его Иван» знаменитого русского художника И. Е. Репина. Картина с трагико-психологическим сюжетом дважды подверглась нападению вандалов с интервалом в сто лет и испытала длительную дорогостоящую реставрацию, даже с не совсем удачным привлечением автора этой работы.

**Ключевые слова:** оценочная деятельность, сфера обращения, предмет искусства, живописное полотно, рыночная стоимость, экспертиза, атрибуция, анализ иерархий, критерий значимости, национальное достояние, страховая стоимость

To write pictures is a profession, to sell them is art.

Henri Joanson

## Introduction

The sphere of circulation of art objects in Russia is a rapidly developing sector of the economy, which has taken its place in the international market. Authoritative specialists

consider it to be one of the main and most promising areas for preserving and multiplying capital. Specific features of the sphere of the circulation of art objects, manifested in the nature of the market demand for them, dynamically developing needs of clients, low susceptibility to crises, make it necessary to thoroughly study and develop systematic, theoretical approaches to improving the functioning and interaction of its participants.

On May 25, 2018, the police of the city of Moscow detained a vandal who, in the evening, broke a glass of the famous painting of Ilya Repin, "Ivan the Terrible and his son Ivan on November 16, 1581" (1883–1885) in the Tretyakov Gallery (Figure 1). According to the official representative of the Ministry of Internal Affairs, a criminal case was instituted on damage to cultural heritage sites. According to the Telegramm channel "112", the detainee is an unemployed person named Igor<sup>1</sup>. He said that he intentionally cut the picture with glass, because he considered the historical fact, represented by the artist, to be unreliable<sup>2</sup>. The agency "Interfax" in the press service of the Tretyakov Gallery reported that the picture is seriously damaged. "The canvas is broken in three places in the central part of the work on the figure of the prince." The author's art frame was badly damaged from the fall of the glass", — they said<sup>3</sup>.

The attacker seriously damaged the canvas, only the restoration of which, according to experts, will cost the museum more than 10 million rubles. But simultaneously it turned out that not a single picture from the collection of the Tretyakov Gallery is insured. Moreover, there is no insurance for any work of art in any museum of the Russian Federation, including the Hermitage. Not insured are in the territory of Russia and all monuments of architecture.

But monuments of architecture, history of culture and the world heritage burn in fires, suffer from natural disasters, anthropogenic pressure of tourists and visitors and so on. And these monuments were not insured for insurance because no one knows their insurance value. Their market value or intrinsic value is also unknown.

The fire that destroyed the Assumption Church of the XVIII century in Kondopoga (Figure 2), including the need for closer cooperation between the church and the museum community to prevent such tragedies. The temple was in joint use and was transferred to the balance of the diocese. But, however, the maintenance is entrusted to the museum. Undoubtedly, the church is ready to bear a part of its responsibility. Another thing is that there was no real possibility to carry out any security functions at the church.

The Assumption Church was built in 1774 and was one of the tallest wooden churches in the Russian North. The temple was an object of cultural heritage of federal significance (Figure 3). The fire occurred on the morning of August 10; according to preliminary data of the Ministry of Emergency Situations, the church was set on fire. The main frame was a four-cornered structure (quadrangular structure), on which were installed two expanding eight-metrics, topped with a tent. The total height of the temple was 42 m, length — 24 m, width — 14.6 m. Inside, until the fire, the iconostasis in the Baroque style was preserved, the ceiling with unique paintings ("Sky"). The 15-year-old teenager poured gasoline at the temple in Kondopoga and set fire to it, firemen came without water, the church, the iconostasis and icons were instantly burnt, the boy was detained, he called himself a Satanist.

Neither the iconostasis of the 18th century nor the building of the church were insured. The insurance value is not determined at all. This is the Russian practice of keeping cultural objects. Exceptions are acquisitions at foreign and domestic auctions by museums and private collectors, as well as the return of once stolen works of art. Naturally, their market or fundamental value is unknown, because the paintings of permanent

<sup>1</sup> <https://ru.telegram-store.com/catalog/channels/smexogram/> (date of the application: 25.05.2018).

<sup>2</sup> That is, the very fact of the cruel murder of Tsarevich — Prince Ivan Ivanovich — by Tsar Ivan IV in the next fit of rage, which is discussed in the domestic historical science.

<sup>3</sup> <http://www.interfax.ru/russia/> (date of the application: 26.05.2018).



Fig. 1. Repin I.E. "Ivan the Terrible Kills His Son" (ru.wikipedia.org)  
"Ivan the Terrible and his son Ivan on November 16, 1581" (1881–1885)  
(one of the official names of the canvas).



Fig. 2. This is all that remains of the monument of architecture of federal significance;  
the object is not subject to full restoration (author's opinion).

museum expositions never passed the procedure of sale through auction houses and did not fall within the scope of circulation of art objects. During the export of collections or individual items abroad, a very conditional insurance payment was assigned to the exhibitions, not based on research and art criticism.

The variety of services offered by the sphere in question is expanding with each year. The sphere of circulation of art objects, which 10–15 years ago was in demand mainly



Fig. 3. In this form, the church stood for almost 250 years; he object was not insured — more than 80 million rubles will be allocated for the creation of the copy.

in Western countries and the Russian elite, is now available to the middle class and enjoys steady consumer demand. Today, the sphere under consideration in Russia is developing noticeably. The emergence of Internet commerce, *On-line* auctions, an increase in the number of auction houses — all this necessitates a comprehensive and thorough study of the domestic and foreign art market.

The relevance of the research topic is determined by the need to solve the problems of socio-economic development of the domestic sphere of circulation of art objects and the scientific substantiation of the characteristic features of the formation and improvement of the mechanisms for the functioning of organizations in the sphere of the circulation of art objects, which should help preserve the national heritage and improve the valuation activity of works of art.

The subject of the research is to some extent developed in certain aspects of the evaluation of art objects, on the effectiveness of the functioning of the sphere of circulation of art objects as an alternative source of investment, measuring the economic efficiency of cultural enterprises, antiquarian business, auction business, valuation activities and other special issues. However, the scientific literature has not received sufficient consideration of the specifics of the circulation of art objects in terms of developing approaches and methods for assessing the market, fundamental and other value of art objects, including paintings and, in particular, the work of Russian masters in the art market.

### **The main goal and problems of the study**

The goal of the study, which is relevant in many respects, is the development and scientific substantiation of methodological provisions and practical recommendations for improving the mechanism of functioning of organizations in the sphere of circulation of objects of pictorial art of Russian artists of the XIX century. Among the research tasks of the most important authors of the article is the development of a methodology for assessing the market value of works of painting using traditional valuation approaches, methods, techniques, techniques and methods.



In the conditions of volatility and variability of the economic position of the state, people are actively searching for the most stable way of investing their savings and savings. Proper investment of free monetary assets in art, in cultural values, in antiques is one such way. Antiquarian things become things that have their own specific biography. It is interesting to trace how the biography of *antiques* is built. The first context of their use can be called utilitarian, since all these objects directly fit into the era of their creation. They constitute the stylistic unity of time as furniture, works of art or objects of everyday life. In other words, antiquarian things are identical to the passing time.

**Antiquarianization of a thing is connected with the fact that there is a transformation of its use value — a thing can lose its utilitarian context of use. The epoch is coming to an end, new artistic trends appear, the fashion for furniture or clothes is passing, their famous owner or even more famous author is dying, new achievements of scientific and technological progress, innovative technologies are appearing. In other words, the stylistic unity of perception of a thing and an epoch is broken.**

Therefore, a kind of “failure” of value or a period of devaluation of value parameters may arise between the two stages, when old things turn into unfashionable, non-functional, ugly, etc. For things to gain new value, for example, they become *vintage*, there must be a group of persons interested in using a thing in a new format or in a new understanding. In the innovative use of these same items, the utilitarian function disappears (or it becomes secondary), and the function of demonstration, symbolic, the function of reconstructing history, maintaining historical memory, etc., comes to the fore.

These things can become symbols of a high social status and be borrowed by new elites, used to create their own (sometimes updated) history, a new personal identity. Things can also turn into collectibles of antiques, like old locks or perfume bottles. With the appearance of signs of consumer demand, things get to the secondary market, become the object of trade operations. There are narrow professionals of such a market segment of trade — dealers, brokers, auctioneers, appraisers, experts who build their business on the difference of estimates associated with different visions of these things in different social groups. And if in some focus groups the thing appears as “useless rubbish”, in other consumer strata it is — as a definite, quite concrete symbolic, desired benefit.

In the latter case, the good can acquire a hedonistic character in full accordance with the doctrine of hedonism (from the ancient Greek ἡδονή — pleasure, deep satisfaction) — the axiological doctrine that pleasure is the highest good and the meaning of life, the only terminal value (while all other values are instrumental, i. e. means of achieving pleasure). Hedonism, unlike utilitarianism, allows for a purely personal egoistic aspiration.

Historically, a person likes to pamper himself, to give himself pleasure, but the more delightful this is, the more expensive it is. The top of such *sophistication* is so thin that it can be felt by a few, but the existence of such an effect forces one to consume even those who do not feel such pleasure. It also falls into the area of hedonism, even imaginary, inspired personally, which is not important, because at the psychological level of human perception of a person's reality there are no differences between entities — objective and subjective; imaginary and real. The more refined and/or saturated the hedonistic aspect of the perception of a thing (good, product) relative to other analogues without damage to the gestalt, the ability of the desired good to give pleasure to the user, the more favorably, and the more the potential consumer is ready to pay for it.

*Luxury and value.* The circuit shown in Figure 4, shows what should be an elite product, which can be assigned a high amount of trade margins/discounts [4]. The stronger the orientation of a particular product (good) to the sphere of pleasure and the more difficult it is to hide the fact of its consumption, the more the future owner can pay for this product.

Denoting these two factors, we can formulate a specific working hypothesis of the study, suggesting that some good can become elitist due to a favorable *combination of*

*circumstances*, that is, sold in tens, or even hundreds and thousands of times more expensive than their counterparts, and otherwise — not sold at all. In this hypothesis it is necessary to recognize that the status and luxurious benefits are not the same at all. The main reason for consuming a status good is to demonstrate belonging to the highest levels of the social hierarchy (possibly a “ladder”), while the acquisition of a luxury product is a realized opportunity to give yourself maximum pleasure even in the event that no one will ever know about it (stolen masterpieces of art).

In other words, a sedan of a representative class is a status product, and a sports car with a piece design and manual assembly, for example *Lamborghini* is a luxury item. And not always one is equivalent to another, although there are enough cases of crossing the characteristics (parameters) of status and luxury. Moreover, it is the optimal combination of status and luxury that is the most demanded and record-paying market commodity [1].

So, for example, the acquisition of an antiquarian work of a high degree of art usually depends quite strongly on emotions and only, secondarily, on the financial considerations of the buyer, the hedonistic approach for individual valuation of objects (say, determining the market value of a painting with the help of the *Painting Calculator*) delivers in primary indicative results.

Thus, calculations based on historical data of art market transactions, in no way guarantee future purchase prices and/or prices for the sale of paintings, or profits (profits) of transaction participants. In addition, the possibility of using statistically reliable individual reports in the available databases of information data is limited to a predetermined minimum number of transactions for each artist. The liquidity and transpar-

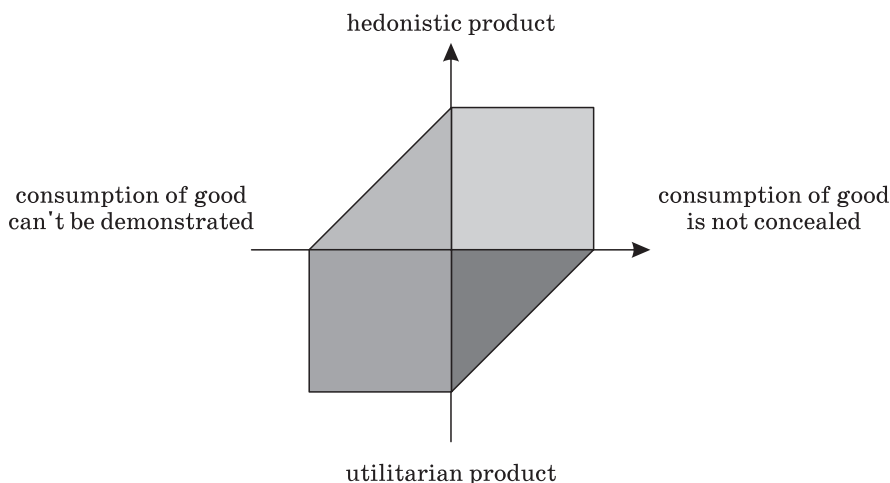


Fig. 4. The influence of the objective function (purpose) of the good (product, work, the sphere of the art) and the possibility of its demonstration on the size of the price premium potential for the benefit: green is the “maximum potential zone”; sand color — good quality low quality, lowly, relatively cheap, falsified, counterfeit, kitsch style<sup>1</sup> items, etc. (developed by the author)

<sup>1</sup> Kitsch (kitsch) — a phenomenon that originated in the XIX century in response to the cultural hunger of the petty bourgeoisie who mastered urban life, but did not have the need to master urban culture. The word “Kitch” came from Germany, literally means cheapness or bad taste. Such an ironic definition was given to art, which acquired a mass character and lost its true meaning for the educated cell of society [Китч в изобразительном искусстве = *A kitsch in the fine arts* [An electronic resource]. URL: <http://trendsdesign.ru/interiorstyles/contemporary/kitch/psevdokusstvo-sovremennosti.html/> (date of the application: 10.06.2018)].

ency of the art markets are much lower than the liquidity and monitoring transparency of the well-known financial markets.

*Investing money in the object of possession.* There are art objects of a commercial nature, the demand and prices for which can be reliably predicted. As a result, the purchase of the antiquities turns into a way to protect the buyer's savings from inflationary processes. If art objects and antiques are of artistic value, made by a well-known master, in a well-known workshop, belonged at the time to a well-known historical personality or are extremely rare, in essence, unique, then such objects become a good way of investing funds for their preservation and augmentation. Art objects are invested not only by private individuals, but also by various corporate structures, for example, banks, large consortia, hotel sets and even government departments.

*Preservation of cultural heritage.* The state retains the most valuable art objects and uses them to symbolically confirm its importance or represents a kind of guarantee of the value of a thing if it is or was in the possession of the state. Thus, the state, implementing a prudential approach, preserves for the existing population and for our descendants, important artistic values, from the point of view of their history, culture and art, world heritage, national heritage, thereby protecting them from destruction, exportation or withdrawal to private collections. At the same time, such state property is at the disposal of various museums and galleries, where it becomes an exhibit open to scientific research and educational activities [5].

So, 11.11.2017, the Ministry of Culture of Great Britain introduced a temporary (for six months) ban on the export from the country of the previously auctioned picture of the British painter William Turner (1775–1851) *Ehrenbreitstein* (1835) depicting an old fortress on the Rhine near the German city of Koblenz. This was reported on Tuesday by the British newspaper *The Guardian* (TASS of January 30, 2018).

The temporary ban on the export of Turner's cloth was introduced in accordance with the recommendations of the Committee for the Supervision of the Export of Works of Art and objects of cultural interest. Committee spokesman Lowell Liebson called the work "magnificent and well-preserved, one of the best in Turner's work of that period." The work, commissioned by the publisher John Pye, was sold last year at *The Sotheby's* auction to a foreign collector for £ 18.5 million, or \$ 26 million.

"This rich, mysterious atmosphere and poetry-related art demonstrates Turner's extraordinary skill in depicting light", the British Deputy Culture Minister Michael Ellis quotes *The Guardian* as saying, "I really hope that the canvas can stay in the United Kingdom where future generations will be able to live for many years admire him and appreciate him". The decision of the British Ministry of Culture, as British experts expect, will find a domestic buyer of the picture. In addition to its auction value, it will have to pay VAT of almost £ 307 thousand, or more than \$ 432 thousand. In early January 2018, a similar measure was adopted by the UK Ministry of Culture regarding the painting of the Italian artist Francesco Guardi (1712–1793) "The Rialto Bridge with Palazzo dei Camerlengi". The masterpiece of the Venetian master was sold last year at *The Christie's* auction to a foreign collector for £ 26.2 million, or \$ 35.5 million. This canvas, created by Guardi in the 1770s, was owned for a long time by the Guinness family, whose representatives put it up for auction.

## Methodology and methods of research

The sphere of circulation of art objects performs the following functions, presented in Figure 5. One of the main features of the sphere of the circulation of art objects is its integrated nature, arising under the influence of the intersection of such spheres of public life as spiritual, artistic and material. Based on this assumption, it is possible to give several more precise definitions as applied to the sphere of the circulation of objects of art:

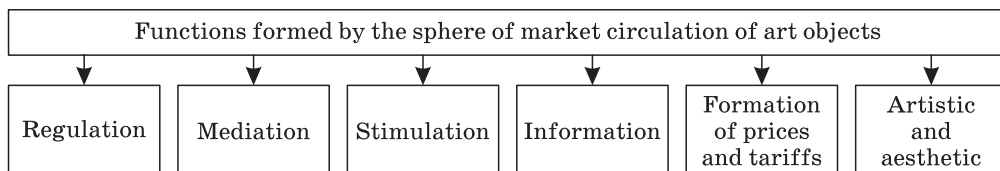


Fig. 5. Functions formed by the sphere of market circulation of objects of art (compiled by the author)

1. This system, aimed at the formation of tastes and preferences of consumers, is a cultural phenomenon, reflecting actualized state of society in which the artist, the expert community and other equitable market participants are involved.
2. This is a certain level of development of the clearing-house mechanism, i. e. system of relationships between artists, dealers, auction houses, collectors, etc. through commodity circulation of art objects.
3. This is a branch of the national economy that directly affects the country's GDP, if we consider the extent of such influence from the positions of territorial (regional) marketing and branding.

Investigating the sphere of circulation of objects of pictorial art and its components, the authors of the article revealed that economic subjects (ES) of the modern commodity market can be divided into several segments, illustrated in Figure 6.

The central segment of the market in Figure 6 is represented by auctions. *Auction house* is an organization whose main function is public sale of goods, securities, property of enterprises, works of art and other objects according to pre-established rules. At the same time, there are three types of auctions: *Dutch* (a high price is assigned, and then it goes down); *English* (the price is gradually rising); *Japanese* (each participant writes his price). Despite the attitude of all auction houses to one segment of the market, there are significant differences between them, both in terms of trade volumes and other significant characteristics. At auctions, you can see more unique and valuable items of art and antiques. All items presented at the auction have certificates of authenticity, and for their quality auction houses meet their reputation. The main buyers at the auction are wealthy buyers, investors and collectors. In Russia, the "English" type of auction took root.

In the annual commodity turnover of the Russian sphere of circulation of art objects, the share of auctions is about 7–10%. Abroad, this share is much higher — 80–85%. According to the results of the study of the antiquarian market, the authors of the article among the auction houses are dominated by *Christie's* and *Sotheby's* — their total share of the cost is 27% of all auction sales in the world. Behind them, as shown in table 2, follows *Bonhams* (5%) and *Phillips de Pury* (6%)<sup>1</sup>.

The largest in Russia is the auction house *Gelos*, founded in 1988, and the House annually holds more than 120 auctions, which sells about 40 thousand items of all kinds of value and related to different types of art. The company's turnover is estimated at \$ 1 million per month<sup>2</sup>. Among other auctions in Russia, also regularly arranging auction of Russian art of the XVIII–XX centuries and objects of art — Leonid Shishkin's auction, *Sovkom* gallery, *Albion* gallery, *Magnum Are* and auction house *Kabinet*. Also, in Russia

<sup>1</sup> Official site of the Christie's Auction House [An electronic resource]. URL: <http://www.christies.com>; Official site of the Sotheby's Auction house [An electronic resource]. URL: <http://www.sothebys.com> (date of the application: 24.05.2018).

<sup>2</sup> Official site of the Gelos Auction house [An electronic resource]. URL: <http://www.gelos.ru/> (date of the application: 24.05.2018).



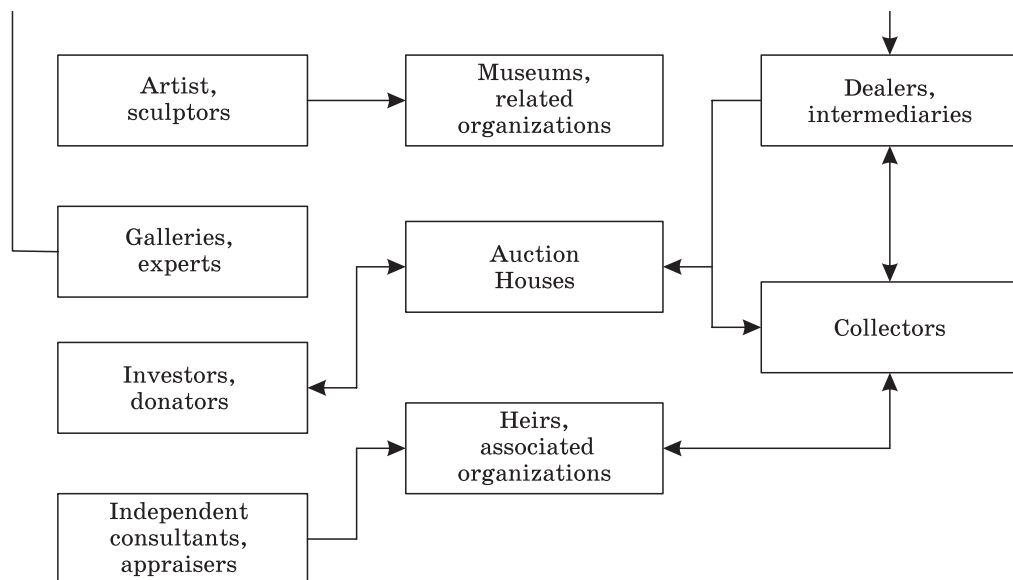


Fig. 6. Structure and the scheme of interrelations of agents of the market of the reference art objects (compiled by the author)

there are about 10 auction houses, some of them specialize in a certain kind of art objects or objects of one historical era. The volume of trade of such auctions is much lower than the turnover of *Gelos*.

*Evaluation services.* At present, this sector of circulation of art objects (Figure 6) is not sufficiently developed. This situation is observed in connection with the insufficient number of professional appraisers, as well as the insufficient level of market regulation, the lack of evaluation methods. Today in Russia professional appraisal activities are conducted by such companies as NP "Community of Professional Appraisal", North-West Appraisal Company, Professional Audit Consulting, LLC "ArtConsulting", etc. In addition to domestic appraisers, there are representative offices of foreign companies on the market, as well as private and public galleries, private agents.

Noticeable biases in the global market structure were the result of simultaneous growth in consumer demand from wealthy Chinese and Western buyers and a synchronized increase in the supply of ancient Chinese art on the market. In the PRC 25 years ago there were no auction houses, nor the very manifestation of consumer demand for art. And at the beginning of 2018 in China there are about 100 registered sites of auction houses, the largest of which, in addition to *Sotheby's* and *Christie's* — *China Guardian Auctions* and *Poly International Auction Company*. The Chinese art market, along with such socially important markets as science and education, exports of consumer goods are rapidly developing. Of the dynamically growing markets of recent times, one can also confidently call the Indian market, which mainly works on the export of antiquities and demonstrates a significant movement — sales volume increased from about € 3 million in 2010, and by the end of 2017 exceeded, according to the report of *Artprice*, € 600 million<sup>1</sup>.

<sup>1</sup> News agency on the market of objects of art Artprice [An electronic resource]. URL: [www.artprice.com](http://www.artprice.com) (date of the application: 11.05.2018).

Table 1

**The main parameters of the world art market for 2015**

N in order	A country	The volume of the market, € million	Structure art market, %	The volume of auction sales, € million
1	2	3	4	5
1	China	601,0	40,0	4 828,50
2	USA	552,0	36,7	6 116,10
3	United Kingdom	231,0	15,4	3 058,05
4	France	26,3	1,8	—
5	Other countries, including Russia	91,8	6,1	—
6	Total:	1502,1	100,0	—

Data source: News agency on the market of objects of art Skate Press [An electronic resource]. URL: [www.skatepress.com](http://www.skatepress.com) (date of the application: 01.05.2018).

Table 2

**Rating of the TOP-10 auction houses based on the results of trade turnover in 2016**

N in order	The name of the auction house	Annual turnover, \$	Sold lots, units
1	2	3	4
1	Christie's	4 968 338 763	19 238
2	Sotheby's	4 570 332 893	14 805
3	Poly International Auction Company	767 441 423	8095
4	China Guardian Auctions	553 020 191	7695
5	Phillips	397 524 395	3311
6	Beijing Council International Auction	294 044 650	3720
7	Shanghai Jiahe	160 679 547	1893
8	China Xiling Yinshe Auction Co., Ltd.	149 486 812	3140
9	Beijing Hanhai Art Auction	147 791 657	4492
10	Bonhams	143 121 888	8949

Data source: News agency on the market of objects of art Artprice [An electronic resource]. URL: [www.artprice.com](http://www.artprice.com) (date of the application: 11.05.2018).

The last 5 years have become the most successful for the world of the circulation of art: its turnover has doubled in comparison with the post-crisis period (2009–2010), when the price fall was 48%. The largest players are the PRC and the US, which reflects the table 1. The Chinese market in 2014 reached the volume of € 601 million, which accounted for 40.0% of the world market; The US fell behind by more than 3% and with a volume of € 552 million took the second place. Great Britain and France noticeably lagged behind the leaders of the world art market — € 231 million (15.5%) and € 26.3 million (1.8%), respectively. The Russian market in this rating occupies a worthy 21 place. However, the structure of auction sales in the same year for the two leaders was the opposite (compare columns 4 and 5 of table 1).

In 2016, several new countries appeared on the art market, among which there are Philippines, which outstripped both Russia and Switzerland in the rating. Among the

most developed markets for contemporary art in Africa and the Middle East, the report highlights the countries that are included in the first Top-50 of the world's leading art markets: Turkey, the United Arab Emirates, South Africa, Iran, Morocco, and others. 2 presents the Top-10 auction houses on the results of trading in 2016.

### Technology valuation of art objects

Works of art are the most specific objects of evaluation, in contrast to such types of property as, real estate, business, vehicles and so on. To assess the works of art, today there is no single theoretical basis, based on which, it would be possible to conduct an assessment. To explain this can be a high degree of individualization of each individual object. Accordingly, this type of assessment is a unique activity and requires a comprehensive and holistic analysis of all available data taken from all sorts of archives and literary sources.

When carrying out the process of assessing the value of an art object, first of all, it is necessary to conduct attribution and examination of the studied object of evaluation. As a rule, specialists of the appraisal activity proper, do not have sufficient volume of special knowledge in such narrow branches of knowledge. In this case, they seek advice from an expert in the field, namely an art critic or an antiquarian. This expert helps to establish the most important parameters: the authenticity of the object and authorship. The object is considered authentic only if it was created with his own hands or with the direct participation of the specified author (master).

The ability to distinguish genuine work from forgery is a decisive skill for a specialist in this field. Today there are a frighteningly large number of copies, including masterpieces executed very skillfully. Accordingly, in order to avoid mistakes, the expert must be aware of the technology, the style of each individual author, the consumables used by him, and so on. In addition to the expertise of the facility, the specialist should also implement in the evaluation process, a thorough study of the art market. To understand the market specifics is necessary to establish the most accurate *attribution value* of the object.

For a detailed study of the facility and establishing its value, it is also important to conduct a technological analysis. This is due to the fact that every day there are more and more counterfeit works performed extremely accurately and accurately, that it is hardly possible to distinguish them from the originals. In such cases, without the special technological expertise, the authenticity of the object can't be established. Here, to the aid of experts come various methods of examination, based on physical and chemical studies of the object. The essence of such an analysis is reduced to the allocation of unique components in the composition of work or techniques that allow the most accurate determination of the time of creation of the object.

The term *examination* has two non-equivalent values. In a narrow sense, expertise is the study of the properties of an object through the use of various diagnostic devices, which enable us to determine its exact, as a rule, quantitative characteristics. In the broadest sense, under examination is meant the official conclusion of a competent specialist, regarding the authenticity and quality of the object under study.

If it is an examination in the broad sense of the word, then it is necessary to say also about attribution. Attribution allows you to determine the age of the subject, its author. Of course, it is far from always possible to determine the exact time and place of the creation of an object. Therefore, as a rule, attribution allows you to refer the work to a certain style, school and so on. Often, the concepts of "examination" and "attribution" equate each other. This should not be done, since expertise is a broader concept than attribution.

Thus, when assessing the value of art objects, it is first of all necessary to include in calculations all the factors that affect its value. Such factors are identified on the basis

of valuation principles, such as: the logic and typology of financial behavior of citizens<sup>1</sup> in the formation of a fair price of an object in a free market. These principles are universal and interrelated. But, at the same time, their orientation differs depending on the purpose of the assessment and the main qualities and characteristics of the object of evaluation. The specialist should choose the method of calculating the cost, suitable for each individual valuation object, carry out market analysis on the valuation date, and take into account the maximum number of factors affecting pricing.

As is known, the main approaches used by appraisers in the course of their activities are *costly*, *profitable*, *comparative* approaches that, with the help of appropriate methods, are applied to the valuation of art objects. It should be noted that the core of any approach to evaluation is the interests of the parties and the objectives pursued by them, as well as the supply-demand ratio in the cultural property market as of the valuation date specified in the Evaluation Report.

We will illustrate the procedure for assessing the cost of painting in a comparative (market) approach, which includes the following stages: market analysis; the identification of structural elements of comparison that affect the value, as well as units of comparison; the process of establishing links between units for comparison and comparative elements; calculation of the price of the object, based on the prices of the analogues. In the process of using the comparative approach, we apply the method of *pair sales*, the essence of which is to compare the prices of two identical items. These items differ only in one of the compared elements, but it is this element that reflects the existing price differences.

When conducting a comparative study, experts, as a rule, face the problem of incomparability of characteristics of analogical objects. It becomes impossible to determine the level of influence of each of the properties of objects on their value. In the case of such cases, it is advisable to involve the *hierarchical analysis method (HAM)* developed by the American mathematician T. Saati in the 1970s. 20th century, has received wide popularity and has found its distribution in different scientific fields. *HAM* is based on mathematical procedures that make it possible to make a hierarchy of measured characteristics, which directly affects the identification of the object and its cost [3].

*HAM* is used when it is necessary to make a choice based on available alternatives. Such alternatives have their own scales, knowledge of which allows choosing the most optimal alternative. The main task is to establish similar weights, by using *HAM*. The role of alternatives is played by objects that are analogues for calculating the price of an object. It is very important in this situation to find the object of an analog that is as close as possible to the object of evaluation.

Building a decision-making model is a fairly time-consuming process. Expert appraiser as a result receives detailed description of how, affecting the priority alternative solutions and decisions themselves, the factors interact with each other. The calculation of rating solutions in the *HAM* is quite simple, which has a positive impact on its dissemination among expert appraisers.

The valuation of the art object includes the following stages: selection of analogical objects; calculation of the rating of the object-evaluation and analogical objects within the framework of the hierarchy analysis method; selection of the closest object to the rating of the analogue object by rating and calculation of the correction factor taking into account the differences in the rating indicator; calculation of the market value of the evaluated object according to the scheme shown in Figure 7.

The first stage in the framework of the *HAM* is the organization of hierarchy levels: from comparison purposes through the criteria of the inverter block to the lower level

<sup>1</sup> In the spirit of the theory of behavioral finance of Nobel laureates in economics, Kaneman D. — Tverski A. [2].

of alternatives. Representing the hierarchy as simple as possible in the *HAM*, it is possible to describe its structure from the very top (the market value of the valuation object), through intermediate criteria to the lowest level — alternatives in analogues (analogue N 1, analog N 2, ..., analog N  $n$ ). Then the process of assigning priorities to the selected criteria is carried out, i.e. quantitative determination of which criteria are the most, and which are the least, significant in the valuation process.

The following factors may serve as comparative criteria: author's fame, safety, creation date, quality level, public recognition, sizes, etc. The list of criteria varies depending on the individual characteristics of the object. Obviously, in the first place, it is necessary to take into account those data, in the reliability of which, there is not the slightest doubt. At the same time, we note that the range of such criteria for highly specialized items of valuation (second-hand books, philately, numismatics, etc.) can be expanded by other criteria.

The second stage of *HAM* is the development of matrices of paired comparisons for all lower levels for one matrix for each individual element that adjoins the upper level. This stage is the most important in the framework of the method, since it is precisely it that enables the specialist to show his knowledge and competence. Accordingly, this stage affects the reliability of the final calculation of the value of the art object.

The third stage within the *HAM* is the verification of the index, or the *consistency* factor ( $\tilde{K}$ ) of each matrix. Based on the basic positions of linear algebra, a positive definite and inversely symmetric matrix having rank  $R = 1$  has a maximal eigenvalue equal to the degree of the dimension of this matrix. Making comparisons in the real situation, the calculated maximum eigenvalue ( $\lambda_{\max}$ ) will be different from the corresponding eigenvalue for the ideal matrix. This difference is a characteristic of the so-called *mismatch of the real matrix* and demonstrates the level of confidence in the results achieved. The stronger this difference, the level of confidence will be lower. Such disagreement can be caused, at least, by two circumstances: the personal and professional qualities of the evaluating expert and the level of uncertainty of the estimated pictorial work.

If the columns in the normalized matrix are identical, then we can conclude that the original matrix is *matched*. In the event that the matrix of paired comparisons is not agreed, the established coefficient/index  $\tilde{K}$  gives information on how much this consistency is violated. The coefficient  $\tilde{K}$  is used to check the consistency of the comparison matrix as follows. When  $\tilde{K} < 0.1$ , the degree of inconsistency is *acceptable*. Otherwise, the degree of inconsistency of the matrix is high, and the subject responsible for making the decision should check the elements of the matrix pair comparison, in order to construct the most consistent matrix.

The fourth stage of application of the *HAM* is based on the use of the so-called *hierarchical synthesis* for the purpose of weighing the eigenvectors by the weights of the criteria and calculating the sum over all corresponding elements of eigenvectors lying below the level of the hierarchy. The result implementation of this stage is the construction of the rating of the assessed object and the comparable analogs. The assessor should assess the adequacy of how the assessed objects are ranked in relation to similar objects, by analyzing the market within which the evaluated object exists. If the evaluator sees that the rating objects in the rating are not located correctly, he should check the matrix of pairwise comparisons and draw another estimator to construct such matrices in order to obtain an alternatively constructed rating.

Based on the results of the estimated rating of the evaluated object and similar objects, the following variants of the location of the valuation object can be obtained: the first line of the rating; the lower line of the rating; a line between two similar objects. Based on the rating location of the evaluated object, the corresponding *correction fac-*



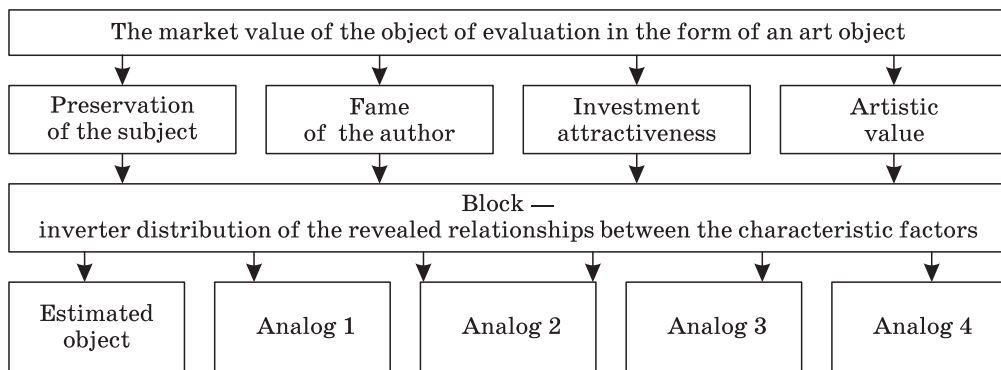


Fig. 7. The hierarchy of value levels from the position of the *HAM* in the cross-sectional analysis of the characteristics-factors of analogues (developed by the author)

*tor* is calculated —  $k_i$ . The value of the estimated object is calculated by multiplying the value of a similar object, which is closest in the rating, to the correction coefficient  $k_i$ . If necessary, when the market situation undergoes changes for various political, economic or social reasons, and to take into account the features of the evaluated object that are not available to the analogs, special correction factors  $k^i$ , can be used. They are calculated in the course of the analysis of market information or are built using the method of expert assessments for the  $i$ -th criteria, where  $n$  is the maximum number of recognized criterions.

Before you start directly assessing the value of the object of pictorial art with the help of *HAM* and other evaluation technologies, you need to provide some information about the author of the painting. This information can be obtained by studying the biography of a particular artist, in particular I. E. Repin, whose canvas came at the beginning of the article. Its continuation and calculations will be published in the next issue of our journal.

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