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How They Did It

Tales of the Greatest Investors of All Time

Art Dealers: The Other Vincent van Gogh

Everyone has heard of Vincent van Gogh, the artist whose work eventually dazzled the world with his original use of brush strokes and color, but who died impecunious and minus one ear. His uncle, who was also named Vincent van Gogh, is not remembered. This uncle was a very wealthy person, and was a partner in an art dealership known as Goupil & Cie, which existed in 19th century Paris and was located at Rue Chaptal. The firm was large enough to have other branches, including one at 19 Boulevard Montmartre, which was managed by Theo van Gogh, the artist's brother. Mention of this situation can be found in Van Gogh's letters to Theo. Interestingly, the brothers, Vincent and Theo, referred to their uncle as "Uncle Cent," cent being the French word for 100, a possible reference to his wealth. Goupil & Cie not only had other branches in Paris, but in many other countries as well. For example, another Paris branch was located at 2 Place de L'Opéra, and there was one at 289 Broadway in New York City. It was an international firm that was enormous for the time.

Similarly, everyone has heard of the painter Henri Matisse, who is considered the second most important 20th century artist, after Picasso. In 2009, Christie's auctioned off a Matisse entitled *Les coucous, tapis bleu et rose* from the Yves Saint Laurent collection for 32 million euros. However, Matisse the artist was not nearly as financially successful as the other Matisse. Pierre Matisse operated the Pierre Matisse Gallery for 65 years at 41 East 57th Street in New York City.

It will be obvious in a moment why I'm discussing art, how the study of art can have incredible bearing on portfolio structure. Before delving deeper into that connection, some general remarks are needed. The great art dealers of the 19th and 20th centuries amassed enormous fortunes. At first glance, you might have thought that such a feat was impossible, because the great art dealers didn't handle the bulk of the art volume. In other words, they didn't make the money through their business. The great auction houses to this very day facilitate by far the bulk of the art sales. Those auction houses include Sotheby's, Christie's, Phillips de Pury, Tattersalls, Lyon & Turnbull, Hôtel Drouot, (owned by BNP Paribas) and Bonham's, which was established in 1793. The oldest auction house in the world is Stockholm's Auktionsverk, established 1674. Other auction houses are the Swedish company called Bukowskis, established in 1870, and the famous Dorotheum in Vienna, established in 1707.

Those auction firms do the bulk of the business in art, but the dealers, small as they are, accumulate the fortunes. For example, Heinz Berggruen was a German immigrant who, after arriving in the United States in 1939, subsequently became an Assistant Director of the San Francisco Museum of Modern Art. He eventually became an art dealer and amassed a collection by artists that include Braque, Klee, Giacometti, Matisse and, of course, Picasso. In the year 2000, he sold a part of his collection to the Berlin State Museum for 129 million euros. The German government considered the sale price to be a gift, because it was estimated at the time that his collection was worth 10 times the amount that was paid. That's clearly a lot of money. The German government must have been very grateful, because they built a museum to house this art directly across the street from the Charlottenburg Palace. They built an apartment for Mr. Berggruen on the top floor of the museum so he could be close to his art collection.

He died in 2007, and his funeral was attended by the Bundespraesident, the Bundeschancellor, Angela Merkel, and many other political dignitaries, as can be confirmed by reading the various obituaries both in German and in English. The art collection was not his whole fortune. In the 1980s he made a gift of 80 Klees to the Metropolitan Museum of Art in New York City. Even so, Berggruen amassed a fortune that's probably equal to anything that outstanding investors such as Michael Steinhardt or Julian Robertson did.

Here's the question that relates art collection to stock selection and portfolio structures: how was Berggruen able to choose so wisely? It wasn't a question of one or two or three paintings; it was many paintings. Art has been chosen as the subject of this section, because it is essentially subjective. How could anyone have known what people would consider good art 50 or 100 years in the future? There aren't any valuation metrics for art like there are for stocks. When evaluating stocks, we can talk about metrics like P/E ratios and price-to-book value ratios. They have a value, which is arguable, but at least equities can be reduced to a certain metric. There's no such metric in art; it is much more subjective.

The answer to the question of how these art dealers could be so prescient is that they were not. Nor were they lucky; they had a technique. We, as equity investors, can benefit greatly from their long-term investing technique, because there's a certain art, not in the work, but to portfolio structuring.

Let's study the life of Daniel-Henry Kahnweiler, who is one of the best documented art collectors, because he created what would pass for an autobiography. He gave a series of interviews to Francis Crémieux in 1961. They were broadcast on French television and were then collected in a book entitled *Mes Galleries et Mes Peintres*, or *My Galleries and My Painters*.

Kahnweiler represented Picasso, so he would have made a fortune in any event, since Picasso was a recognized artist before the First World War. Kahnweiler, who was a resident of Paris at the time of the outbreak of that war, was also a German national. Since German nationals were considered enemy aliens, Kahnweiler's entire collection was confiscated by the French government, and was auctioned off as war reparations. He lost his entire fortune and, at the age of 36, had to start again from zero.

The following letter from Picasso illustrates Kahnweiler's approach to buying art. Reproduced below is a contract letter written by Picasso to Kahnweiler, which can be found in *My Galleries and My Painters*. [1]

> 242 Boulevard Raspail
> December 18, 1912
>
> My Dear Friend,
>
> This letter confirms our agreement covering a period of three years beginning December 2, 1912.
>
> During this period I agree to sell nothing to anyone except you. The only exceptions to this agreement are the old paintings and drawings I still have. I shall have the right to accept commissions for portraits and large decorations intended for a particular location. It is understood that a right of reproduction to all the paintings that I sell to you belongs to you. I promise to sell you at fixed prices my entire production of paintings, sculptures, drawings and prints, keeping for myself a maximum of five paintings a year. In addition, I shall have the right to keep that number of drawings which I shall judge necessary for my work. You will leave it to me to decide when a painting is finished. It is understood that during these three years I shall not have the right to sell the paintings and drawings which I keep for myself.
>
> During these three years you agree to buy at fixed prices my entire production of paintings and gouaches[2], as well as at least 20 drawings a year. Here are the prices which we have agreed on for the duration of our agreement:
>
> Drawings: 100 francs
> Gouaches: 200 francs
> Paintings up to and including number 6: 250 francs[3]
> Paintings up to and including numbers 8, 10, 12, 15, 20: 500 francs
> Up to number 25: 1,000 francs
> Numbers 30, 40, 50: 1,500 francs
> From number 60 and up: 3,000 francs
> Prices of sculptures and prints to be discussed.
>
> Yours,
> Picasso

Three points can be made, the first being that Kahnweiler was not buying individual works; he was buying a portfolio. His method was effectively akin to indexation, but not exactly. This observation brings us to the second point, which is that Kahnweiler was buying works that had not yet been produced. Say what one will about indexation, one at least can have some information on the companies included in the index sample. Kahnweiler could not know what the paintings would look like; therefore, he could not

[1] Crémieux, Francis. *My Galleries and My Painters*. London: Thames & Hudson, 1971. (154)
[2] Gouache: a more opaque white pigment in a gum arabic mixture is added to watercolor paint to achieve light-reflecting brilliance in a painting. The colors merge at the boudaries. Turner, who predates the Impressionists, painted in gouache. He's my favorite artist.
[3] These numbers refer to Picasso's c*atalogue raisonné*, the French term for a comprehensive catalogue of all the works of an individual artist. The sequence may skip some numbers, because a painting or other work may have been unsuccessful, lost or destroyed.

possibly have known whether or not they were good. The third and very important point is that Picasso had the right to keep some of the works for himself. Yet, though Picasso's life is very well-documented, there is no evidence whatsoever that he kept his most valuable paintings; therefore, even he did not know which were the most valuable.

My argument, as stated above, is that the Kahnweiler technique, such as it is, relates to indexation. I found it so unusual that I began to study the lives of other dealers to discover whether or not it had been emulated and, in fact, I found quite a lot of evidence to show that it was. Though the dealers listed below may be unfamiliar, I assure you that they were astonishing businessmen for their time.

In the beginning of René Gimpel's autobiography entitled *Diary of an Art Dealer*[4], he talks about the entire Rudolf Kann collection in a discussion with a man by the name of Joseph Duveen. (Duveen eventually became a big art dealer himself; however, he's excluded from my list, because he was guilty of various improprieties.) Gimpel bought the entire Kann collection in partnership with Duveen. According to Gimpel, Georges Bernheim, another big dealer of the era, worked with Matisse in much the same way as Kahnweiler worked with Picasso. According to the biography of Paul Durand-Ruel, a 19th century art dealer, he worked with Monet and Pisarro on exactly the same basis that Kahnweiler worked with Picasso[5].

Ambroise Vollard, another 19th century art dealer, published an autobiography called *Recollections of a Picture Dealer*[6], which refers to buying whole portfolios of paintings by Cézanne, Pissarro and Vignon in baskets, much like one would buy baskets of stocks.

Let's take the idea of indexation of art, which is similar to, yet at the same time different from, portfolio indexation, and examine it using first an arithmetically simple example, then using a little more formal mathematics. I've created two portfolios each composed of *n* number of securities. For the sake of simplicity—obviously reality would be very different—I divided the number *n* into five quintiles. In portfolio number one, as can be seen below, I have five quintiles. They are broken out as follows: 20% will appreciate in a given year by 25%, 20% will appreciate by 15%, 20% will appreciate by 10%, 20% won't appreciate at all, and 20% will decline by 10%. Let's assume there's a 10% stop-loss.

Let's also assume, as is very common in the world of portfolio management, that this portfolio will have 100% turnover per year. At the end of each year, all the gains and losses would be realized, and they would be reinvested with the same quintile structure. This portfolio, if reinvested the same way every year, would still compound, but not in the same securities. The table below shows how each quintile will fare. If one invested $200,000 in each quintile of this portfolio, and it were continued every year in the manner described, at the end of 25 years it would be worth $6,848,475.20. Over the course of 25

[4] Gimpel, René. *Diary of an Art Dealer.* New York: Farrar Straus & Giroux, 1966, (6)
[5] Assouline, Pierre. *Discovering Impressionism: The Life of Paul Durand-Ruel.* New York: Magowan Publishing, 2004. (170-176)
[6] Vollard, Ambroise. *Recollections of a Picture Dealer*. New York: Dover Publications, 1978. (117)

years, it would have an 8% compound annual rate of return, not counting taxes and assuming zero transaction costs. This is an example of what I will term "conventional compounding."

Table 2: Conventional Compounding Portfolio

Quintile	Percent of Portfolio	Return on Revenue	Original Investment	Return after each year
1	20%	25%	$200,000	$250,000
2	20%	15%	$200,000	$230,000
3	20%	10%	$200,000	$220,000
4	20%	0%	$200,000	$200,000
5	20%	-10%	$200,000	$180,000
	100%		$1,000,000	$1,080,000

Let's compare the above portfolio illustration to one that I'll call "static compounding," which may be observed in an art collection. There are collectors in the art world who will hold art investments for 25 years, but that holding period is not that common in securities. In this next portfolio example, I translated that long holding period into the world of securities. This portfolio is also separated into five quintiles with rates of return of 25%, 15%, 10%, 0% and negative 10%. The only difference in static compounding versus conventional compounding is that the static portfolio is left unchanged. In the static portfolio, if a given security in a given year appreciates by 25%, it is presumed that it will increase at that rate for the entire life of the portfolio, which is 25 years in this illustration. If an investment loses 10% in a year, it will lose 10% per year every year for 25 years.

Table 3: Static Compounding Portfolio

Quintile	Percent of Portfolio	Return on Revenue	Original Investment	Return after 25 years
1	20%	25%	$200,000	$52,939,559
2	20%	15%	$200,000	$6,583,790
3	20%	10%	$200,000	$2,166,941
4	20%	0%	$200,000	$200,000
5	20%	-10%	$200,000	$14,358
	100%		$1,000,000	$61,904,648

This portfolio, having the same quintile structure as the former, but with static compounding would produce a value of $61,904,648. Feel free to check my arithmetic, but I'm pretty confident that it's correct. Therefore, that portfolio, statically compounding as it would be, would have a compound annual rate of return of 17.94% per year.

To show you how powerful the static compounding structure is, I arbitrarily decided to take the 25% rate of return quintile, and make it a 9% rate of return quintile. Therefore, it would fall in comparison to the conventional compounding portfolio. This portfolio, altered in the following manner, would still be worth $10,689,705 at the end of 25 years, and would still compound at 9.94%, better than the 8% rate of return of conventional compounding and a much better quintile structure. Or, phrased alternatively, you might say it has much better stock selection.

Now let's understand this concept using a little more formal mathematics. I don't want to get too formal, because people don't like formal mathematics, but we have to do it. You can take any portfolio value over time and express it as a function in polynomial format. For example, I could take either of these portfolios and say:

$$Portfolio\ value = a_1(1+r_1)^n + \ldots + a_i(1+r_i)^n$$

where n is the number of years, a_i is the position value, r_i is the return on that position. I apologize for using these terms. I use this format because any polynomial can be expressed as a power series by the use of dummy variables. I'll use an example that does not pertain to the portfolio, but which serves as an example of dummy variables. I can rewrite the polynomial $f(x) = x^2 + 2x + 3$ *as* $f(x) = 3 + 2x + 1x^2 + 0x^3 + 0x^4$ ... and so on, infinitely, and they are basically the same.

As you will recall from your calculus, the reason for using a power series is that they have convergence properties.[7] They either converge or diverge to a certain limit. In some applications that feature is called the "radius of convergence," of which there are plenty of examples in the study of calculus. I recall that you'd calculate the radius of convergence by using the Cauchy–Hadamard theorem. However, you don't even need advanced mathematics because, if you thought about the basic polynomial and the end value of a polynomial, the value *a* is clearly dependent upon the rate of return of that security. The higher the rate of return of that security, the higher the value is going to be. As a result, the highest rate of return security is going to have the highest weight, and therefore the portfolio return $f(x)$ is going to converge on the highest individual constituent return.

That behavior is basically what happened in the art portfolios. The great investors bought vast quantities of art. A subset of the collections turned out to be great investments, and they were held for a sufficiently long period of time to allow the portfolio return to converge upon the return of the best elements in the portfolio. That's all that happens. An interesting aspect about using art in this context is that not only does it provide examples of long-term investors, but in art there are examples of portfolios that are artificially frozen.

An example of a collection that was frozen in this manner belonged to Jacques Goudstikker, a Dutch art dealer who was killed in May 1940 while trying to escape the Nazis. His collection was seized by the Nazis, and after the War was given to the Dutch government. Goudstikker's heirs litigated against the Dutch government for possession of that portfolio for six decades, which amounts to it being frozen. They didn't get back his entire collection of 1,113 works, but 202 paintings were finally returned to his family. One could measure what those 202 paintings were worth in 1940, and what they were worth in 2007 to see if the convergence really works.

[7] For a detailed example of convergence, please see page 21.

Leo Castelli, a very prominent New York art dealer, died in 1999. His collection was sold in 2007 for $600 million. The former French cultural attaché, Annie Cohen-Solal, wrote a biography of Castelli, which was published very recently and is well worth reading. Castelli's collection would be another portfolio on which to test convergence in this context.

Ambroise Vollard, whose autobiography was cited earlier, died in a car crash in 1939. At the time of his death 141 paintings were placed in a Société Générale vault, where they were left undiscovered until 1979. They were only discovered because no one had paid the storage bill. Since that time to this very day, those paintings have been the subject of litigation, which is now apparently resolved. Those paintings will be auctioned off in 2010, and offer an empirical example of how convergence will work in a static portfolio.

You can also do it hypothetically in multiple fashions, because an author by the name of Gerald Reitlinger wrote a book called *The Economics of Taste: The Rise and Fall of Picture Prices 1760-1960*[8] that was published in 1961. It provides the prices of various works of art going back to the middle of the 18th century. Those historical prices couldn't be found easily for stocks; however, one could take the prices of art from the middle of the 18th century to create hypothetical portfolios. One could choose works at random and then calculate what would have been the static compounded returns to test for convergence.

Interestingly, Reitlinger himself, though he was an art historian, became a collector of Islamic, Chinese and Japanese porcelain, and he happened not to trade his portfolio. Therefore, at his death the portfolio was virtually priceless. He donated it all to the Ashmolean Museum in Oxford where it is housed in its own wing.

It's amazing what happens in static portfolios. This observation has a real bearing on the whole theory of indexation, because no one can come to this conclusion by studying equity portfolios. A good reason to study art portfolios as opposed to equity portfolios is that the equities don't remain constant over time. Companies merge with each other, go private or even disappear. It's not altogether easy to find unchanged portfolio attributes for very long periods of time. In art, however, if Vermeer happened to create a painting in the 17th century, assuming it has survived, it's still a Vermeer. Therefore, due to the availability of historical information, one can construct theoretical portfolios using art, whereas it would be much more difficult to get the data for securities.

The lesson for portfolio structuring, and I think for indexation and ETF structuring, is that you want to create an ETF that will have minimal turnover in time, and therefore will have the highest degree of probability of convergence on the best elements of that portfolio.

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[8] Reitlinger, Gerald. *The Economics of Taste: The Rise and Fall of Picture Prices 1760-1960.* London: Barrie and Rockliff, 1961.

APPENDIX

Convergence Illustration

The following is a brief outline and illustration of how a two security portfolio's return converges in the absence of rebalancing. Simplifying assumptions have been made.

R_1 Expected return for asset 1; $-1 \leq R_1$
R_2 Expected return for asset 2; $-1 \leq R_2$
w_0 *Initial weight assigned to asset 1;* $0 < w_0 < 1$
$1 - w_0$ *Initial weight assigned to asset 2;* $0 < 1 - w_0 < 1$

The portfolio's return for period *t* is

$$PR_t = w_t * E(R_1) + (1 - w_t) * E(R_2)$$

Assuming the expected return for each asset is constant and normally distributed over time the asset weights at period *t* are determined by the equations

$$w_t = \frac{\left(\frac{1+R_1}{1+R_2}\right)^t}{\frac{1}{w_0/1-w_0} + \left(\frac{1+R_1}{1+R_2}\right)^t}$$

and

$$1 - w_t$$

Substituting the above in for w_t, we can define the portfolio return for period t (PR_t) in terms of initial weights as:

$$PR_t = \frac{\left(\frac{1+R_1}{1+R_2}\right)^t}{\frac{1}{w_0/1-w_0} + \left(\frac{1+R_1}{1+R_2}\right)^t} * R_1 + \left(1 - \frac{\left(\frac{1+R_1}{1+R_2}\right)^t}{\frac{1}{w_0/1-w_0} + \left(\frac{1+R_1}{1+R_2}\right)^t}\right) * R_2$$

From this equation we can make a few observations as $t \rightarrow \infty$:

(1) If $R_1 > R_2$ then; $w_t \rightarrow 1$ and $PR_t \rightarrow R_1$
(2) If $R_1 < R_2$ then; $w_t \rightarrow 0$ and $PR_t \rightarrow R_2$
(3) If $R_1 = R_2$ then; $w_t \rightarrow w_0$ and $PR_t \rightarrow PR_1$
(4) $PR_t \geq -1$

The compounded portfolio return (CPR) over *n* periods is described by the equation:

$$\text{CPR} = [(1 + PR_1) * (1 + PR_2) * (1 + PR_3) * (1 + PR_n) \ldots]^{1/n} - 1$$

This equation can be restated as:

$$\text{CPR} = \left[\prod_n^{\infty} (1 + PR_n)\right]^{1/n} - 1$$

This equation will converge if and only if the following converges:

$$\left[\prod_{n}^{\infty}(1+PR_n)\right]^{1/n}$$

Applying the natural log yields

$$\ln\left[\prod_{n}^{\infty}(1+PR_n)\right]^{1/n}$$

Which is equivalent to

$$1/n \ln\prod_{n}^{\infty}(1+PR_n)$$

further, applying the natural log to a product we can write

$$1/n \sum_{n}^{\infty}\ln(1+PR_n)$$

multiplying $1/n$ through yields

$$\sum_{n}^{\infty}\frac{\ln(1+PR_n)}{n}$$

We know that $\prod_{n=1}^{\infty}(1+a_n)$ converges, if and only if, $\sum_{n=1}^{\infty}a_n$ converges. Using the ratio test for convergence, assuming for all $n, a_n > 0$.

$$\lim_{n\to\infty}\left|\frac{a_{n+1}}{a_n}\right| = r$$

If $r < 1$, then the series converges. In our case

$$\frac{\frac{\ln(1+PR_{n+1})}{n+1}}{\frac{\ln(1+PR_n)}{n}} < 1$$

Assuming (PR_t) converges then the compound portfolio return should converge to the return offered by the security with the highest return R_1 or R_2 (see exhibit 2).

Illustration

$w_o = 50\%;\ \ 1 - w_o = 50\%$ $\qquad R_1 = 5\%;\ \ R_2 = 10\%$

Exhibit 1
Portfolio Weights, W(t)

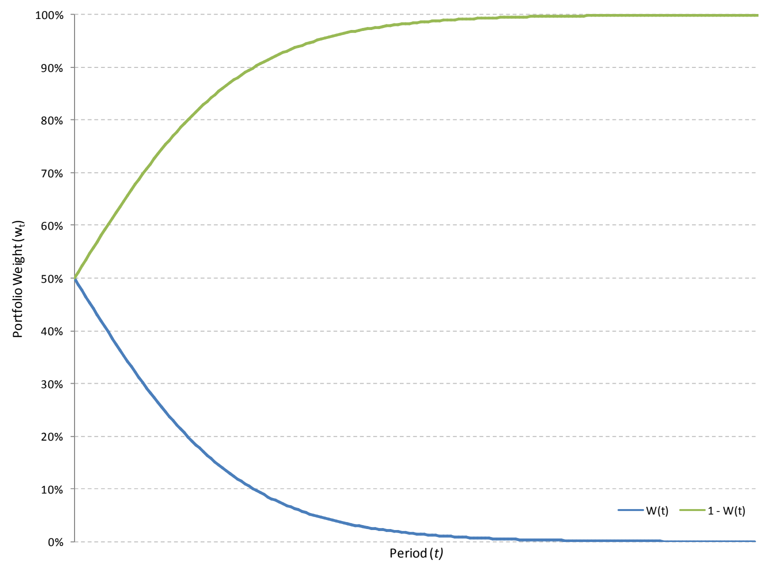

Exhibit 2
Portfolio Period Returns (PR_t) & Compound Portfolio Return CPR