The Highlights - Fact, Factoid, Factotum

A distinct class of Web sites has emerged within the past 5 years to package and quantify artists, works of art, and even art mediums into statistics. Artfacts, Art Market Research, the Mei Moses Index and the Art Confidence Indicator, take typically insider information - who is the most important artist in the world or whether contemporary or Dutch 18th-century painting is the wiser investment - and crunch the data through internal databases to translate their results into public information. I generally admire attempts to reformat qualitative data into numbers. Attitudes, observations, and even the visceral can be inputted and analyzed. As a former student of statistics and econometrics, I have great respect for empirical models that could, for example, challenge the once undisputed link between GDP and literacy by presenting the Indian state of Kerala as an outlier case of democratic reform affecting literacy. Empirical models are the public policy world's industry standard for measuring the effect of variable x on important things like, poverty, good governance, population health, or in the case of many of these Web sites, money's relationship to art. In order to function effectively as a guiding compass for art world insiders, their methods should be subject to rigorous testing as much as any other financial database or scientific study. To that end, I sharpened my quantitative analysis skills and gave myself a long homework assignment.

Artfacts initially caught my attention because it makes a bold claim: it tells us who are the most important artists in the world. My associative mind wonders what if there had been a device that could rank popularity in my high school - who are the most popular seniors? Would the results reveal that nobody actually liked the blonde twins who ruled our school, or would they emerge from the polls jointly ranked at number one? What would the rankings be based on, and how accurate or reliable could these measures be? How would publicizing this information alter the social dynamics of my high school?

If galleries are the social hallways and locker rooms for artists, then Artfacts is a yearbook for the 190,000+ active artists and alumni it catalogues. Its volumes include the profiles of many close artist friends. Artists ranked 14,823 and 71,433 (at time of writing) regularly submit their exhibition updates to Artfacts and watch their new status rise and fall accordingly. Number 118,747 spent an entire day researching every artist she knew, marveling at how small the industry actually is. By tracking their own rankings and following their colleagues' careers, artists themselves are activating the Web site. User-generated participation is powerful. We have learned this lesson from the social networking phenomena of MySpace and Facebook, and although the Artfacts community is much smaller and the barrier to entry much higher than simply signing up for a profile, it still garners value, and to a certain extent legitimacy, from user-based activity.

Marek Claasen, the Director of Artfacts, described the site as a guide for decision making. "We want to give an unbiased picture of the art world by collecting and interpreting data in a

transparent manner. Through our methods we make artist careers comparable." The reference tool's primary feature - the "Artist Ranking" - does exactly that. Based on artists' exhibition history, it compares multiple careers on the same x and y axes. If an artist adds to her resume several public exhibitions, solo or group shows, and expands her international network by showing in Europe, then her individual rank should rise. Artists and galleries submit this exhibition information to Artfacts, which then runs the data through its algorithm to arrive at a ranking. It is notable that unlike other sites, Artfacts does not take into consideration auction sales prices.

When I use the artist rank to compare Anri Sala (rank #81 and the youngest of the top 100, born in 1974) with Paul Cézanne (rank #36 and the deceased father of modern painting, a museum retrospective favorite, and record-setter at the auction house), their respective graphs show interesting trends; they move in exactly opposite directions. When Paul goes up, Anri goes down. This observation seems trivial but when translated into the language of stock portfolios, opposite trending identifies "alpha" and "beta," the two pillars of the hedge fund and private equity worlds. Alpha is performance above and beyond the S&P 500. Beta is closely linked to the S&P 500's mood swings. As a relatively new artist among the top 100, Anri Sala's career shows beta. His rank wobbled in 2002 as the S&P dipped in response to low employment levels and the Dot-com era fallout. It leveled off in 2004 and started falling from 2007 to 2008 as markets flattened again. Meanwhile, Paul Cézanne trended upwards during these same years, putting up "alpha" returns that are uncorrelated with the S&P. Why is this interesting? From an investor standpoint, a well-diversified portfolio (or art collection) needs alpha. When the rest of the collection value falls (and this might include more volatile categories such as emerging market artists), there is a counterbalancing category that rises in value (which traditionally has included modernism, impressionism, or old masters). In order to identify alpha, investors are willing to pay to hedge funds top dollar bills amounting to the 2% of invested capital in management fees and 20% in profit fees.

Artfacts is not the pioneer in its metric efforts. Other sites have focused more specifically on the consistently tumultuous relationship between money and art. Art collecting has long been a luxury status identifier among the aristocratic and the very wealthy. In the financial bull market of the 1980s however, art caught the attention of hedge funds as the art market underwent its own major economic boom and subsequent bust. In light of these developments, there was a need for primary and secondary markets and for investors to understand this maturing market's relationship to financial returns. In the 1990s two Stern School of Business professors developed the Mei Moses Index, which uses auction prices to calculate annual returns. For the most part, it follows the S&P index fairly closely and has marginally outperformed it in the past 10 years and significantly surpassed it in the past 5 years, putting up 16.2% returns above the S&P's 12.7% average. (Andrew Slayman, "State of the Art Market: Through Thick and Thin," Art & Antiques, August 2008) Art investment funds have adopted the Mei Moses Index as supportive evidence to invest in art as an asset

class.

University of Chicago economist David Galenson has developed a similar ranking system as Artfacts has, but applied to individual works of art. His econometric model measures the frequency that images have appeared in print form post 1990: museum catalogs, art history texts, monographs, et cetera (New York Times, August 4, 2008, Arts Section "A Textbook Example of Ranking Artworks") Visual accumulation is powerful and presents indisputable hard data, but Galenson's methods overlook the significance of Web-based media like Artnet, the online authority on auction prices and an indispensable industry research tool. Galenson relies on 28 data points in his declaration of Picasso's "Les Demoiselles d'Avignon" to be the most important 20th-century work, a small sample pool by any standard. (Statistical significance requires at least n = 30 data points.) Artnet alone would give him hundreds of thousands of Web hits to contend with and undoubtedly shake up the results. At this point, Web-based art sites affect the industry in significant ways and cannot be discounted from serious studies.

On the most basic level, Artfacts and other art market sites are storehouses of data. I wondered how it would hold up against a more rigorous econometric investigation that could tell us exactly how significant exhibition history really is to an artist's ranking, and whether there are other variables (gender and posthumous status) that might also determine an artist's importance. The following outlines a simple regression analysis I carried out based on data collected for Artfact's top 100 artists.

THE QUESTION: Does exhibition history matter and if so, which of the exhibition variables most dramatically affects artist rankings? For example, would my artist friend number 71,433 rise more rapidly if he had one additional solo show or one additional catalog to his name?

THE HYPOTHESIS: All variables are expected to have a positive, upward effect on an artist's rank. Variables such as the number of dealers and level of international representation may have a larger effect on rank than an additional solo or group show.

THE METHOD: I tested for the individual and joint significance of six exhibition variables as displayed by Artfacts: public exhibitions, solo shows, group shows, number of dealers, public collection holdings, printed catalogs, and international representation.

THE RESULTS: The overall exhibition history model explains about 47 percent of an artist's

ranking as shown by the Adjusted R-squared figure below. This is fairly high considering that rank could still be affected by other non-exhibition factors such as auction prices or personal celebrity or race, et cetera.

Solo shows and the number of dealers were the only two significant variables that positively affected an artist's rank. Holding all other variables constant within a 5% margin of error, 1 additional solo show will increase an artist's rank by 0.08. Adding 1 more dealer will increase it by 0.41. These increases appear slight, but given that the artists are already within the top 100, the margin by which to rise or fall is much narrower. If Bruce Nauman, currently ranked number 3, were to add 3 additional dealers to his profile and no other changes occurred in anyone else's profile, Nauman could knock Pablo Picasso out of the number 2 spot.

The presence of negatively correlated variables: group shows, public collections, and international representation are contrary to the hypothesis expectation, but may be attributed to persistently high levels of autocorrelation in the model. (Please see appendix for further explanation)

```
  Source |       SS       df       MS              Number of obs =     100
---------+------------------------------           F(  5,    94) =   18.87
   Model | 41734.7568      5  8346.95136           Prob > F      =  0.0000
Residual | 41590.2432     94  442.449396           R-squared     =  0.5009
---------+------------------------------           Adj R-squared =  0.4743
   Total |     83325      99  841.666667           Root MSE      =  21.034


------------------------------------------------------------------------------
     rank |     Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
---------+--------------------------------------------------------------------
     solo |  .0814533   .1075389     0.76   0.451    -.1320676    .2949742
    group | -.1733843   .0319179    -5.43   0.000     -.236758   -.1100105
   dealer |  .4142713    .139408     2.97   0.004     .1374735    .6910691
collections | -.4154867   .106401    -3.90   0.000    -.6267485    -.204225
countries | -1.100907    .700838    -1.57   0.120    -2.492437    .2906233
    _cons |  107.2254   7.261782    14.77   0.000     92.80695    121.6438
```

THE EXPANSION: I then extended the model to consider what might happen if we considered living artists against posthumously exhibiting artists, or if gender factored any role. Sixty-five out of the top 100 artists are living. Eighty-four out of the top 100 are men. The newly generated variables "dead" and "male" were jointly insignificant, but interesting observations followed once the distinctions were made. Among deceased artists, a solo show had much greater impact on rank than gaining a new dealer did. The opposite was true among living artists. Among female artists, acquiring one new dealer could increase her rank by over 1 full position. Marginal gains in dealers or solo shows affected rank among women artists ranks more strongly than among male artists, suggesting that women artists can climb faster. The problem with this analysis lies in the small sample size of 14 female artists. Further testing could be done among a larger pool to determine if these observations still hold.

```
Source |       SS       df       MS              Number of obs =      14
-------------+------------------------------             F(  5,    8) =    9.45
       Model | 8227.68308    5  1645.53662             Prob > F      = 0.0033
    Residual | 1392.67407    8  174.084258             R-squared     = 0.8552
-------------+------------------------------             Adj R-squared = 0.7648
       Total | 9620.35714   13  740.027473             Root MSE      = 13.194


--------------------------------------------------------------------------------
        rank |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+------------------------------------------------------------------
        solo | -1.102437    .3532001    -3.12   0.014    -1.916918   -.2879565
       group | -.3515969    .1688398    -2.08   0.071    -.7409423    .0377484
      dealer |  1.059259    .4528178     2.34   0.047     .0150596    2.103459
 collections |  .0022912    .6288167     0.00   0.997    -1.447763    1.452345
   countries |  .2517505    1.202646     0.21   0.839    -2.521555    3.025056
       _cons |  156.8038    20.72154     7.57   0.000     109.0199    204.5878
```

THE LIMITATIONS: The model is limited because it cannot distinguish between important institutions and galleries and lesser-known ones. Marek Claasen further clarified for me how the Artfacts' point system tackles this challenge. Their nuanced algorithm awards galleries points based on the gallery's artists and its geographical location. Larry Gagosian's galleries will accumulate more "network points" by showing Cecily Brown, Cy Twombly, and Richard Serra and by occupying storefront spaces in New York, Los Angeles, London, Moscow, and Rome. Similarly an artist gains more "points" toward his individual ranking by showing at Gagosian.

Despite all of the quantifying efforts to decipher the art market, there are others that maintain the limitations of numbers. John Elderfield, MoMA's Chief Curator of Painting and Sculpture, is one who believes these approaches can only go so far and says, "There are great, great things being made which are not reducible to statistics." (same New York Times source, page E5) Contrary to Elderfield, the first rule of statistics states that given enough data, anything can be measured. The second rule of statistics, however, complicates this by stating that there is no causality. Just because the twins are blonde doesn't necessarily cause them to be popular, and by extension, having a lot of exhibitions doesn't cause an artist to be number one. What we can say is that an artist's rank has something to do with exhibition history (or at least 47 percent of the rank has something to do with it - within a 5 percent error margin of course).

```
Variable    |     Obs       Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       rank |     100       50.5    29.01149         1        100
     public |     100     279.23     126.826       144       1037
       solo |     100      43.92    32.99179        13        228
      group |     100     233.73    101.4049       111        821
     dealer |     100      36.68    33.32572         1        203
collections |     100      59.32    37.15838        14        238
    catalogs |     100       1.02    1.734848         0          8
   countries |     100       9.38    3.894518         1         20
        dead |     100        .35    .4793725         0          1
        male |     100        .86    .3487351         0          1
```

APPENDIX: Summary Statistics

Correlation Matrix for all variables

The Correlation Matrix shows the variables most closely related to one another. The variable "group" has a correlation value of 0.9840 with "public". Since it is almost a 1-to-1 relationship, one of the variables should be eliminated to avoid attributing deceivingly high explanatory powers to the model. I removed "public exhibitions" from the final regression model. Additionally, the variable, "catalogs" proved to be statistically insignificant and was also eliminated from the model.

```
(obs=100)
             |    rank   public     solo    group    dealer collec~s catalogs countr~s
-------------+------------------------------------------------------------------------
        rank |  1.0000
      public | -0.6227   1.0000
        solo | -0.4095   0.8105   1.0000
       group | -0.6347   0.9840   0.7271   1.0000
      dealer | -0.3713   0.6717   0.7155   0.6218   1.0000
 collections | -0.5300   0.6572   0.6407   0.6239   0.8341   1.0000
     catalogs | -0.2703   0.4506   0.4515   0.4149   0.3826   0.3750   1.0000
    countries | -0.3303   0.4283   0.4127   0.4056   0.6276   0.5142   0.2037   1.0000
```

Revised model adjusted for correlation error

Regresses rank against public exhibitions, solo shows, group shows, dealers, public collections, and international representation.

The 6 exhibition variables jointly explain 47.43 percent of an artist's ranking. The only two positively correlated variables are solo shows and dealer as shown by the positive sign of the coefficient. The negatively correlated variables indicate that the model may have persistent autocorrelation. Other closely correlated variables included "solo shows" and "group shows," but it was not possible to remove one because they were both jointly significant to the model as a whole.

```
      Source |       SS        df        MS              Number of obs =      100
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```