

An Exploration of Oaths and Vows in Early English Documents

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Introduction

In Shakespeare's *A Midsummer Night's Dream*, a number of characters make promises that they temporarily stop fulfilling. This pattern is reflected from the first scene of the play when Helena is lamenting her unrequited love for Demetrius; she says

“So the boy Love is perjured everywhere.
For ere Demetrius looked on Hermia's eyne
He hailed down oaths that he was only mine;
And when this hail some heat from Hermia felt,
So he dissolved, and show'rs of oaths did melt.”
— 1.1.247-251

This is quite a revealing metaphor about the way Shakespeare's characters view oaths. It implies they have a perspective that vows and promises are made in a certain set of circumstances that are “cold” in a sense, and that if the circumstances sufficiently “warm up” the promises are not durable. As many vows are made about the future, they are necessarily made without complete information about the circumstances they will be fulfilled in.

There is some ambiguity in the play, then, as to the legitimacy of promises if they can “melt”. One could argue that Demetrius's oath to Helena was useless and essentially a lie, because his commitment to her fell apart as soon as he became infatuated with Hermia. However, the exact same situation temporarily happens with Lysander breaking his promise to Hermia that they are “two bosoms interchainèd with an oath” (2.2.55) when Puck's nectar causes him to become deeply infatuated with Helena. She responds to this dramatic change by saying “These vows are Hermia's. Will you give her o'er? / Weigh oath with oath and you will nothing weigh” (3.2.133-134). Helena is making the point to Lysander that she has felt acutely with respect to Demetrius—a promise of love is meaningless if it is made to more than one person in such a short span of time. But while Helena likely views the two situations as analogous, the audience knows that Lysander is not acting of his own volition and thus is less likely to blame him for making a promise that he does not keep while under the influence of the nectar. This raises a question to ask of this play as well as other texts in the 16th and 17th centuries: how are oaths understood in the context of changing circumstances, and under what circumstances is it justifiable to break them?

Data and Methods

The basis for this analysis was \mathbf{E} , a 30672×8588 matrix where $\mathbf{E}_{i,j}$ represents the frequency that a given word i occurs in a given document j . These documents come from the Early English Books Online database. In order to investigate the connections between oaths, love, and documents from this time period, latent semantic mapping

was used. To accomplish this, a matrix \mathbf{W} was created using the positive pointwise mutual information (PPMI) measure, so \mathbf{W} 's values were determined from \mathbf{E} with the formula

$$\mathbf{W}_{x,y} = \max \left(0, \log \frac{p(x,y)}{p(x)p(y)} \right).$$

Then, the singular value decomposition (SVD) \mathbf{E}_{svd} of \mathbf{W} using 300 latent dimensions was determined such that $\mathbf{W} = \mathbf{USV}^T$ where:

- \mathbf{U} is a 30672×300 matrix containing the eigenvectors related to the word vectors (the rows) in \mathbf{W}
- \mathbf{S} is a 300×300 diagonal matrix with the eigenvalues of \mathbf{W} on the diagonal
- \mathbf{V} is a 8588×300 matrix containing the eigenvectors related to the document vectors (the columns) in \mathbf{W} .

As such, \mathbf{US} is the matrix multiplication \mathbf{U} times \mathbf{S} and \mathbf{VS} is the matrix multiplication \mathbf{V} times \mathbf{S} . It is then meaningful to compare vectors from \mathbf{US} with vectors from \mathbf{VS} because \mathbf{S} scales the vectors in both matrices to line up the same way in the 300-dimensional semantic space.

```
data(E)
data(E_svd)
shakespeare = 8553:8588
US = E_svd$u %*% diag(E_svd$d)
rownames(US) = rownames(E_svd$u)
VS = E_svd$v %*% diag(E_svd$d)
rownames(VS) = rownames(E_svd$v)
```

A secondary set of matrices was created that mirrors the above process, but only using the 36 documents in \mathbf{E} written by Shakespeare. So $\mathbf{W}_{\text{shakespeare}}$ is the PPMI of the subset of \mathbf{E} with only Shakespeare's plays, $\mathbf{E}_{\text{svd}}_{\text{shakespeare}}$ is the SVD with 35 latent dimensions of $\mathbf{W}_{\text{shakespeare}}$, $\mathbf{US}_{\text{shakespeare}}$ is the eigenvectors relating to the 30672 words, and $\mathbf{VS}_{\text{shakespeare}}$ is the eigenvectors relating to the 36 plays.

```
W_shakespeare = ppmi(as.matrix(E[,shakespeare]))
W_shakespeare = Matrix(W_shakespeare)
E_svd_shakespeare = irlba(W_shakespeare, nv=35, approx=FALSE)
US_shakespeare = E_svd_shakespeare$u %*% diag(E_svd_shakespeare$d)
rownames(US_shakespeare) = rownames(E_svd$u)
VS_shakespeare = E_svd_shakespeare$v %*% diag(E_svd_shakespeare$d)
rownames(VS_shakespeare) = rownames(E_svd$v)[shakespeare]
```

A measure used extensively throughout the analysis was cosine similarity, defined for two vectors \vec{a} and \vec{b} as

$$\frac{\vec{a} \cdot \vec{b}}{|\vec{a}| |\vec{b}|}.$$

Geometrically, it is the cosine of the angle between \vec{a} and \vec{b} , so a cosine similarity of 1 means the vectors are colinear and in the same direction, 0 means they are normal to each other, and -1 means the vectors are colinear but in the opposite direction. Thus, a value relatively close to 1 means the vectors are pointing in a fairly similar direction in the semantic space and are used in similar ways by documents. Another measure is k-means

clustering, which groups vectors into clusters by choosing random initial points, grouping vectors based on a Voronoi diagram, and continuing to regroup until there is no more changing in groups. In theory, vectors in a cluster will then be more closely related in semantic space to each other than to vectors in other clusters.

Using these eigenvectors, a vector **vosVec** was created by summing the vectors in **US** associated with “vow”, “oath”, and “swear”. Then, a list called **most_sim** was created of the 100 vectors in **US** that have the highest cosine similarities with **vosVec**. (Analogously, **most_sim_{shakespeare}** was created in the same way with **vosVec_{shakespeare}** and **US_{shakespeare}**). Next, k-means clustering was used numerous times on the 100 vectors in **most_sim** from clustering into 2 groups to clustering into 10 groups. Each cluster had a number of words in it, and these vectors in **US** were summed. All in all, 54 of these vectors were formed, and the vector **cluster_vec** was the vector with the highest cosine similarity to the vector in **VS** related to *A Midsummer Night’s Dream*. This vector should be a group of words related to oaths and vows, to each other, and to the play, which should give insight into the questions posed in the introduction. Finally, the 10 vectors in **VS** with the highest cosine similarity to **vosVec** were found. These documents should give context to the views of vows and oaths found in *A Midsummer Night’s Dream*.

Analysis

```
vosVec = US["vow",]+US["oath",]+US["swear",]
vosShakespeareVec = US_shakespeare["swear",]+US_shakespeare["vow",]+US_shakespeare["oath",]
most_sim = most_similar(US,vosVec, num_results=100)
most_sim_shakespeare = most_similar(US_shakespeare,vosShakespeareVec,num_results=100)
print(most_sim)
```

```
##      swear      vow      oath      oaths      sworn      vowe      wrong      protest
## 0.9181974 0.8032749 0.7967762 0.7780298 0.7755947 0.7064159 0.7046862 0.6993356
##      tell      bid      owe      what      why      leaue      swore      oaths
## 0.6960291 0.6944980 0.6932416 0.6876017 0.6840637 0.6785247 0.6778836 0.6756862
##      loose      mad      know      vndone      no      farewell      thinkes      friend
## 0.6690016 0.6685789 0.6679657 0.6668824 0.6648930 0.6642592 0.6640132 0.6635185
##      wish      ere      please      yours      hold      nay      steale      fellow
## 0.6632796 0.6627263 0.6626441 0.6606674 0.6598893 0.6594778 0.6581955 0.6581674
##      excuse      rob      dare      stand      would      kisse      hang      lend
## 0.6570155 0.6568037 0.6555406 0.6550455 0.6545464 0.6534107 0.6533600 0.6522283
##      marry      vowed      scorne      how      amends      bound      forswear      your
## 0.6516224 0.6516003 0.6513380 0.6510306 0.6496359 0.6496268 0.6493705 0.6493279
##      wronged      play      weare      stolne      ile      morrow      now      forgot
## 0.6477052 0.6476595 0.6453529 0.6442532 0.6437096 0.6434808 0.6423779 0.6417860
##      fetch      shame      boy      iest      slaue      lies      stranger      periured
## 0.6413262 0.6406388 0.6401028 0.6385014 0.6371939 0.6363541 0.6359497 0.6358523
##      tricke      bad      stay      conceale      mine      tis      kill      swears
## 0.6348917 0.6342443 0.6342077 0.6341898 0.6334628 0.6330203 0.6329394 0.6325474
##      intreat      breake      disgrace      aside      swearing      fie      spend      thinke
## 0.6318730 0.6311469 0.6310722 0.6304389 0.6299904 0.6297819 0.6295965 0.6293602
##      once      suite      welcome      forsworne      speake      my      got      bed
## 0.6293020 0.6291724 0.6289971 0.6289311 0.6289201 0.6282745 0.6274841 0.6272016
##      mistris      sport      bold      laugh      broke      beare      spoke      gone
## 0.6270246 0.6269060 0.6265197 0.6258738 0.6254651 0.6253702 0.6241397 0.6238351
##      heare      worse      dares      knowes
## 0.6236895 0.6234352 0.6234223 0.6225705
```

```
print(most_sim_shakespeare)
```

```
##      oath      vow      sweet      oathes      matched      thicket      harmonie
## 0.8868646 0.8719967 0.7965832 0.7826739 0.7543922 0.7438727 0.7399426
##      maketh industrie      agonie      cleaving      suspicious      infringed      toying
## 0.7288722 0.7288722 0.7288722 0.7288722 0.7288722 0.7288722 0.7288722
##      decree      periured      thickest      enrolled      sunshine      gift      shade
## 0.7269406 0.7250235 0.7215898 0.7215898 0.7165849 0.7131451 0.7120105
##      periurie      lodge      taske      faire      repaire      vowed      singled
## 0.7095996 0.7095397 0.7090468 0.7087993 0.7056302 0.7051275 0.7022365
##      sweare      fast      touching      vntill      tread      washt      mounsier
## 0.7011466 0.7002133 0.6981240 0.6969770 0.6963115 0.6958165 0.6951970
##      stumble      wanton      minutes      mourning      meed      rest      wo
## 0.6942670 0.6929639 0.6908616 0.6895850 0.6812122 0.6793895 0.6782596
##      quick      louing      proues      yeelding      doth      kingly      game
## 0.6782302 0.6777468 0.6763850 0.6756965 0.6753083 0.6749493 0.6722026
##      beauties      conceits      forsworne      pierce      for      colt      ore
## 0.6709772 0.6697483 0.6682319 0.6619606 0.6598741 0.6598198 0.6591352
##      won      mistres      swaine      brest      vouchsafe      shoote      guiltie
## 0.6588259 0.6574191 0.6564423 0.6556625 0.6553192 0.6544616 0.6523002
##      three      shrowd      salue      hinder      suters      president      therefore
## 0.6512631 0.6509581 0.6506332 0.6504171 0.6503000 0.6488897 0.6477759
##      following      miles      tawnie      face      iudas      rust      befall
## 0.6473474 0.6470204 0.6461844 0.6444801 0.6438427 0.6438170 0.6427357
##      bals      impose      measure      boy      threshold      deuouring      swayed
## 0.6427239 0.6422022 0.6421675 0.6407165 0.6399868 0.6397922 0.6394600
##      antipodes      month      likest      godlike      necessitie      monarch      gentle
## 0.6394600 0.6386414 0.6374496 0.6374496 0.6371926 0.6368069 0.6367868
##      fasts      eye      pen      hercules      shoulder      sighes      bethinke
## 0.6356208 0.6349957 0.6337713 0.6334816 0.6317583 0.6302407 0.6295688
##      heares      contrary
## 0.6294920 0.6288694
```

The words “vow”, “oath”, and “sweare” were chosen because they are all used in *A Midsummer Night’s Dream* and have fairly similar meanings, so they were summed together to obtain a more central direction toward the idea of making promises. The words at the top of **most_sim** seem to corroborate this, as they are all essentially synonyms. There are also many words that one would associate with promises that go well, such as “friend”, “please”, “kisse”, “marry”, and “laugh”. But interestingly, there are also many words that seem to be associated with negative emotions and situations (perhaps oaths that went poorly) such as “wronged”, “protest”, “rob”, “steale”, “shame”, “scorne”, “disgrace”, “broke”, and even “kill”. While many of the words from **most_sim_{shakespeare}** are different, and there seems to be a bit weaker of a connection to the theme, this pattern still emerges. “Harmonie”, “dance”, “sunshine”, and “sweetly” seem connected to vows that went well, while “agonie”, “iudas”, “infringed”, “breake”, and “shoote” seem to be the opposite. Interestingly, “periured” comes up in both lists, which appears in the quote from the introduction about love being perjured.

The explicit connection between oaths and romance is also telling with words such like “marry”, “mistris”, “beauties”, “kisse”, and (probably) “bed”. This corroborates what is seen in *A Midsummer Night’s Dream* that vows are often made and broken with respect to love and infaturation. In light of this, the dichotomy between strong

positive outcomes and strong negative outcomes associated with oaths is not unexpected. Love and romance are often written about in extremes because the emotions associated with them are often intense, so it makes sense that if vows are associated a similar pattern would hold.

```
play = "MND"
clusters <- list()
similarities = c()
index = 1
for (i in c(2:10)) {
  clustersI = kmeans(US[names(most_sim)],,centers=i)$cluster
  for (j in c(1:i)) {
    cluster = names(which(clustersI==j))
    if (length(cluster) > 1) {
      vec = colSums(US[cluster,])
      sim = cosine_similarity(vec,VS[play,])
      clusters[[index]] = cluster
      similarities = append(similarities,sim)
      index = index + 1
    }
  }
}
cor = which.max(similarities)
print(clusters[[cor]])
```

```
## [1] "tell" "bid" "mad" "play" "boy" "iest" "fie" "sport" "laugh"
```

```
clusterVec = colSums(US[clusters[[cor]],])
```

With a general context for the concepts of oaths and vows in the corpus, the questions from the introduction can be addressed more directly in light of *A Midsummer Night's Dream*. This cluster is the grouping of **most_sim** whose sum has the highest cosine similarity with the play out of a number of possible clusters. These words make sense: “bed” and “gone” could have to do with the scene where Hermia wakes up to find Lysander gone, “bid” and “tell” could have to do with Oberon ordering Puck to give Demetrius the nectar, “boy” could be Titania’s child that she and Oberon argue over, etc. The range of emotions and association with love is still in this cluster, though not as dramatically as in the whole list because there are fewer words, and also likely because the play is, at its core, a fairly light-hearted comedy where the tone hints to the audience that things will work out for the characters in the end. Thus, the perspective of oaths from the play seems to be that they are often related to love and can cause damage and sadness when broken, but that they are not the end-all-be-all and a broken oath can ultimately be repaired. After all, Demetrius and Helena as well as Lysander and Hermia end up together, even though both men break promises during the play to the partner they end up with.

```
knitr::kable(eebo_metadata[names(most_similar(VS, vosVec)),])
```

	TCP	EEBO	VID	STC	Status	Author	Date	Title	Terms	Pages
A07326	A07326	99845578	10485	STC 17713; ESTC S109948	Free	May, Thomas, 1595-1650.	1622.0	The heire an excellent comedie. As it was lately acted by the Company of the Reuels. / Writren [sic] by T.M. Gent..		66
TGV	TGV					Shakespeare, William, 1564-1616.	1591.0	Two Gentlemen of Verona		
A00723	A00723	99841212	5776	STC 10852; ESTC S105484	Free	Field, Nathan, 1587-1620?	1618.0	Amends for ladies VVith the humour of roring. A comedie. As it was acted at the Blacke Fryers, both by the Princes seruants, and the Lady Elizabeths. By Nat. Field.		64

	TCP	EEBO	VID	STC	Status	Author	Date	Title	Terms	Pages
A06177	A06177	99836979	1282	STC 1667; ESTC S101156	Free	Beaumont, Francis, 1584-1616.; Fletcher, John, 1579- 1625. aut; Sidney, Philip, Sir, 1554-1586. Arcadia.	1615.0	Cupids reuenge As it hath beene diuers times acted by the Children of her Maiesties Reuels. By Iohn Fletcher		83
A03197	A03197	99841835	6449	STC 13317; ESTC S106110	Free	Heywood, Thomas, d. 1641, attributed name.	1607.0	The fayre mayde of the Exchange with the pleasant humours of the cripple of Fanchurch. Very delectable, and full of mirth.		76
MM	MM					Shakespeare, William, 1564-1616.	1603.5	Measure for Measure		

	TCP	EEBO	VID	STC	Status	Author	Date	Title	Terms	Pages
A06333	A06333	99845286	10177	STC 16799; ESTC S109639	Restricted		1600.0	A pleasant commodie, called Looke about you As it was lately played by the right honourable the Lord High Admirall his seruaunts; Look about you.		90
Err	Err					Shakespeare, William, 1564-1616.	1594.0	The Comedy of Errors		
A00725	A00725	99837844	2190	STC 10854; ESTC S102043	Free	Field, Nathan, 1587-1620?	1612.0	A vvoman is a vveather- cocke A new comedy, as it was acted before the King in White-Hall. And diuers times priuately at the White- Friers, by the Children of her Maiesties Reuels. Written by Nat: Field.		70

	TCP	EEBO	VID	STC	Status	Author	Date	Title	Terms	Pages
A12072	A12072	99841871	6486	STC 22379; ESTC S106147	Free	Sharpe, Roger.	1610.0	More fooles yet. Written by R.S.	Epigrams, English – Early works to 1800.	38

With this perspective in mind, the question can now be posed to other documents from this time period. These documents are the documents with the highest cosine similarity with **vosVec**, which should give context to the way other documents in this time treated vows and oaths.

One of the documents with the highest cosine similarity is *Cupid's Revenge* by John Fletcher. This is a tragedy by a playwright in the same era as Shakespeare (he and Shakespeare collaborated on two plays), and it describes Cupid taking revenge on a family for not sufficiently honoring him by entangling people romantically in a way that causes problems. One quote from the beginning of the first scene is “Is’t not idle, to sweare to graunt his Daughter any thing she shall aske on her byrth day? she may aske an impossible thing: and I pray heauen she doe not aske an vnfit thing at one time or other; tis dangerous trusting a mans vow vpon the discretion on’s daughter” (Fletcher 1). In the scene, the king has promised his daughter anything she wants for her birthday, and she ends up asking for her father to stop honoring Cupid, which ultimately causes the problems in the play. In this case, the king is actually harmed for fulfilling the promise to his daughter because it contradicts the wishes of Cupid. This could be interpreted as a commentary on the ignorance of youth, or as saying that it is more important to fulfill promises to people who are more powerful than to those who are less powerful (a view that from a modern perspective is quite problematic).

There is still a strong association seen in *Cupid's Revenge* between oaths and love, and the message once again seems to be that given sufficient motivation it is acceptable and sometimes even wise to break promises (things likely would have turned out better in the play had the king not fulfilled his daughter’s wishes). Many of the other documents in this list that have a high cosine similarity with vows, oaths, and swearing are comedies (including three other comedies from Shakespeare), which would suggest that making promises is treated fairly lightly in these documents as well. Therefore, it seems that Shakespeare’s treatment of these themes is fairly typical and characteristic of his time.

```
cosine_similarity(colSums(US[names(most_sim)],),colSums(US[names(most_sim_shakespeare)],))
```

```
##          [,1]
## [1,] 0.8881769
```

This number is the cosine similarity between the sum of the eigenvectors in **US** related to the words in **most_sim** compared to in **most_sim_{shakespeare}**. The similarity is quite close to 1, which supports the claim that Shakespeare’s treatment of vows and oaths was fairly characteristic of his time.

Conclusion

It seems that in this time period, vows and oaths were somewhat malleable and not viewed as entirely binding. In *A Midsummer Night's Dream*, promises are made, broken, and then made again alongside wildly varying emotions, but in the long-term these broken promises have fairly minimal consequences once the situation is resolved. Because of this, neither Lysander nor Demetrius suffer drastic consequences from breaking their promises. To return to the opening quote, the environment where Demetrius’s promises to Helena were made is brought back about by the nectar, and the two of them end up happily married. The “tragedy” in *Cupid's Revenge* is brought

about by a promise to his daughter *not* being broken and the resulting consequences, and the other documents in the corpus most associated with oaths and vows are primarily comedies where situations are resolved in the end despite drama and problems caused by breaking promises. Based on the parallels in Shakespeare's plays to other documents at the time, as well as the high cosine similarity shown at the end of the analysis section, it seems that Shakespeare and other writers at the time had fairly similar views on these themes. To return to the questions posed in the introduction, the understanding in these documents is that (at least in fiction) oaths being broken in the wake of changing circumstances causes problems, but not usually insurmountable ones, and that there are sometimes good reasons to break promises. This view is one that is not held as widely today, so this pattern reveals a difference in ideology between now and the 16th and 17th centuries.