Here is what I think.
I just want to try to normalize the global effect like what this article said.
(http://blog.echen.me/2011/10/24/winning-the-netflix-prize-a-summary/ , the first part)

What we need do is having a preprocessing program for the whole data.
We need 3 statistics to get the new dataset. If I use x_{ij} to represent the rate for user i giving the movie j.(we only need the x_{ij} that have been given!) And we have totally n users and m movies. Then we need:

1.
$$\bar{x} = \frac{1}{number\ of\ rate} \sum_{i=1}^{n} \sum_{j=1}^{m} x_{ij}$$

2.
$$\overline{x_i} = \frac{1}{number\ of\ moive\ user\ i\ rated} \sum_{j=1}^{m} x_{ij}\ \ for\ \forall\ user\ i$$

3.
$$\overline{x_j} = \frac{1}{number\ of\ user\ who\ rated\ moive\ j} \sum_{i=1}^{n} x_{ij}\ \ for\ \forall\ movie\ j$$

Then we want to make the dataset that just show the specific interaction between user i and movie j. we call this e_{ij}

$$e_{ij} = x_{ij} + \bar{x} - \overline{x_i} - \overline{x_j}$$

So now we are focus on think about the similarity between e. The code will be the same, we just predict the new e_{ij}. And when we get e_{ij}, we can get x_{ij} back as,

$$x_{ij} = e_{ij} - \bar{x} + \overline{x_i} + \overline{x_j}$$