Nonverbal behavior implicitly reveals a wealth of information during face-to-face social interactions. Patterns in physical distancing as well as gaze have been linked to empathy, aggression, prejudice, social support, as well as various clinical conditions. However, assessing these proxemic responses is a methodological challenge. Here I present a new technique, proxemic imaging, that captures subtle patterns in behavior during dyadic interactions. Using motion capture, we combine precise position and head orientation data to create frequency images of interpersonal space and mutual gaze. To demonstrate its efficacy, we used this technique to examine social interactions with fair versus unfair others. While participants generally avoided unfair confederates, more retaliative participants (i.e., participants who punished fairness violations) showed distinct differences gaze and approach that were uniquely revealed by the proxemic images. In addition to presenting the method, I will discuss potential applications of proxemic imaging in clinical and other applied domains.