Online Proceedings

SESSION 2I

PURSUING JUSTICE

Session Moderator: Steve Herbert, Geography
MGH 254
3:30 PM to 5:15 PM

* Note: Titles in order of presentation.

Wealth Redistribution in Agapism
Cecilia Xin Tong Too, Senior, Political Science
Mentor: Jamie Mayerfeld, Political Science

Wealth inequality in the U.S. is at an extremely high level and continues to grow. In 2010, the wealthiest 10% owned 70% of total wealth, a percentage close to the level in 1930. The gross wealth disparity that characterizes the contemporary U.S. is one of the most pressing economic and political issues of our times. In this work, I present agapism as an alternate philosophical system of ethics to address the debilitating wealth inequality in the U.S. today. Agapism is an ethical system based on the commandment in the Pentateuch to love one's neighbor as oneself. Traditionally, academic philosophy has overlooked agapism as an ethical system because its foundational sources are of religious origin rather than grounded in philosophical texts. However, agapism is a robust ethical system that provides compelling moral reasons for government wealth redistribution. In my work, I detail the moral and philosophical reasons for wealth redistribution that arise from the agapist tradition and explore the kinds of moral obligations agapism imposes on individuals and communities. Though agapism's foundational sources include those of Christian origin, I consider and respond to Christian arguments against government wealth redistribution and Christian arguments that make a weaker case for wealth redistribution than agapism calls for. I also consider and respond to arguments regarding the proper and just distribution of wealth from influential secular figures in contemporary moral philosophy, including John Rawls and Robert Nozick. Among other issues, I consider their perspectives on how wealth should be justly distributed, as well as the government's role in wealth redistribution.

POSTER SESSION 3

Balcony, Easel 87
2:30 PM to 4:00 PM

Polymer Fleece Contamination in the Water Supply
Nathan Parker Moon, Senior, Materials Science & Engineering
Mentor: George Mayer, Materials Science & Engineering

Synthetic polymers such as polyester fleece have been used in garments for decades without realization of the significant amount of microscopic fibers that they shed, or the impact of that pollution on our ecosystem. Water samples were collected to determine the presence and chemical composition of plastic microfiber waste in various local water sources such as Lake Washington, the Puget Sound, different tap water sources, and at various stages in the local waste water treatment process. Plastic microfiber waste has been found in surface and tap water around the world, and in this project the degree of plastic microfiber contamination in local waters was determined. To do this, water samples were collected at a variety of locations and filtered, and the resulting filtered matter analyzed using optical and scanning electron microscopy to determine the presence and size of plastic microfibers. FTIR (Fourier transform infrared) spectroscopy was used to determine the plastic's chemical composition. The results of these tests indicated the origin of these microfibers if they are of a type of plastic commonly used in garments (polyester), and the size and presence in samples from different sources indicated if current water purification infrastructure is adequate to remove these microfibers from the water supply. The information gathered can be used to determine the magnitude of the problem and effectiveness of current solutions at a local scale. Recommendations are made regarding the curtailing of this problem.

POSTER SESSION 4

Commons West, Easel 16
4:00 PM to 6:00 PM

Dynamic Loading of Glass Composite
Alexander James Li Green, Senior, Materials Science & Engineering
UW Honors Program
Mentor: George Mayer, Materials Science & Engineering

This project focuses on material variables that govern the toughness of glass-based materials by mimicking the architectures of mollusk shells. Currently, a large challenge in utilizing strong materials for engineering purposes is their in-

herent lack of toughness at large deformations. By stacking plates of strong, brittle material together in the same manner as nacre, and by employing special adhesives to redistribute energy, it could be possible to increase the toughness by creating a new, composite material. The nacre stacking sequence was chosen for this project due to its high toughness in order to achieve a new, glass-composite material which is much tougher than the base reinforcement (glass) alone. Composites are materials made out of more than one material. Composites have a strengthening component (reinforcement) embedded within a matrix material that holds everything together. This project created four-inch long beams of glass-reinforced-adhesive laminates, with varying thicknesses of adhesives. The beams were subjected to impact testing in order to determine their toughness. The Instron Dynatup impact tester was used for these tests. The Dynatup is a drop-tower and utilized a steel, wedge-shaped indenter as the impacting surface. In addition to the toughness (energy dissipation) data recorded by the Dynatup, fractography was conducted using optical and scanning electron microscopy of the fracture surfaces. The results of the monolithic stacking sequence were compared to those of the nacre-like stacking sequence, and conclusions were then determined. Applications that involve improved vehicle windshields and other systems are the goal of this study.