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**Climate as Catalyst in 1,224 Years of Violence and Conflict in Ireland, AD 425–1649**

This project has three aims: (1) to establish whether climatic conditions significantly influence the incidence and character of violence and conflict in Ireland, AD425–1649, through a new synthesis of documentary and biophysical paleoclimatic sources; (2) to identify the complex societal dynamics by which past climatic conditions may act as a catalyst for violence and conflict; and (3) to examine how the evolving historical context mediates any role of climate in this long period of Irish history, involving major socioeconomic developments likely to influence social vulnerabilities.

The foundations of this research are the Irish Annals. These represent annual chronicling of major events by scribes in monasteries across Ireland, comprising 1,136,000 words in multiple texts. Beginning circa AD 425 after Christianity's arrival, the Annals become fully continuous from the seventh century and end only in the mid-seventeenth century when English rule disrupted their recording. The Annals systematically report violence and conflict, including slave raids, mass killings, scorched-earth policies, and forced migrations. Such intense reporting arises from the incompatibility of violence with the scribes' Christian perspective, and the endemic ritualized conflict amongst Irish royal elites. The Annals thus allow a uniquely diverse and continuous reconstruction of the frequency, intensity, and shifting spatial focus of conflict.

The unique record of societal stresses in the Annals reveals that social vulnerability to extremes varies with underlying socioeconomic contexts (e.g., increased dependency on arable agriculture beginning circa AD1100, observed in pollen studies, increases famine and mortality incidence via climatically-induced harvest failure). This record will facilitate testing of widely-cited climate-conflict pathways, e.g., intensified resource competition. Studying the timing of conflict versus climatic trends will allow examination of climate-conflict feedbacks wherein ongoing conflict may increase vulnerability to climatic shocks, which then promote further conflict. The Annals offer parallels for modern studies of

climatic contributions to conflicts with religious and ethnic dimensions, i.e. conflict between Christian Irish and non-Christian “Viking” raiders starting AD795, and Anglo-Norman colonizers starting AD1169. Both brought major socioeconomic changes (sophisticated weaponry, agricultural practices, trade networks) apparent in archaeological and paleoecological records. Together these sources supply a critical contextual background to the project.

Ireland boasts a high-quality oak tree-ring record, revealing growing-season conditions for seven millennia annually across Ireland. Anomalously low growth identifies general climatic deteriorations that impacted upon Irish society. High-resolution Greenland ice-cores also reveal anomalous climate experienced by Irish society in registering major volcanic eruptions through sulphate deposition preserved in annual layers of ice. These eruptions correspond with cold extremes in the Annals and their potential contribution to conflict is one focus of this project. Ireland’s many lake and peatbog sediments preserve remains of species (e.g., insects) sensitive to temperatures and water levels. Tracking species composition and abundance in sediment cores highlights dramatic multi-decadal to centennial changes in background climate.

Combined with paleoclimatic data and insights from paleoecology and archaeology, the evidence of the Irish Annals thus allows a systematic study of the degree to which climate influenced conflict in a complex agrarian society throughout twelve centuries.