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Commentary

In an Agro-Industrial Heartland, Peasant Seed and Plant-Human Partnership are Cultivating Responses

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INTRODUCTION

Response-ability is that the means by which this relational freedom is attained, the method by which crop plants and farmers cultivate the mutual capacity to respond across species lines. Farmers and crop plants come to adapt to and understand each other's ways of working and communicating, becoming subjects and objects to every other in ongoing intra-action, unequally powerful but co-responsive partners. While Hardaway focuses on the capacity of the animal to return the gaze of the scientist, animal ethologist, or lab worker, different frameworks must be applied so as to know plant freedom or agency within the context of agriculture: plants cannot "look back" or "act" within the same way animals can. Plants are often considered passive because human (and other animal) timescales and concepts of mobility, communication and sensation are used as frames of reference: "if, however, plants are considered within their own lifetimes and scales, their responses become active in sometimes quite sophisticated ways instead of passive". Understanding the complex and subtle sorts of interaction and communication between plant and farmer through the method of seed saving sheds light on what forms these responses may take.

In France, the industrialization of agriculture began with the seed. From the pure-line and pedigree breeding experiments pioneered by Vilmorin within the mid-1800s to the invention of F1-hybridization by George Shull following the increase of Mendelian genetics, changing understandings of heredity, evolution and therefore the gene-environment relationship within the 19th and 20th centuries, drove a fixation on purifying the character and habit of crop plants. Before these changes took hold, farmer selection occurred at the population level, allowing plants to retain a degree of natural variability from which farmers selected the morphotype best.

Suited to their needs now, plants were not understood as populations (groups of individuals), constituted by a shifting environment and acted on by a spread of forces: they were seen as individuals, divorced from the "sum total of ancestral influences" with the locus of heredity delimited to the gametes.

F1 hybridization ensures that each one offspring within the F1 generations are genetically identical genetically identical plants enable standardized production techniques, larger plantings with uniform maturity and mechanized harvests. The high yield of F1 hybrids plummet within the F2 generation, as heterozygosis is reduced. Genetic predictability breaks down, because the exact mixture of alleles in parent lines is scrambled, producing many defective or "off-type" plants. This loss of predictability and yield meant that farmers, who traditionally put aside some of the harvest to use for next season's seed or selected a little group of individual plants to function seed bearers to subsequent generation, could not do so: instead, that they had to return to the seed company annually to shop for new stock. By removing the assembly of seed from the space of the farm, where ecological interactions and farmer selection processes create a non-uniform input, seed companies instead produced a typical seed for all farms and farmers. Within peasant seed practice and organic plant breeding, diversity occurs at multiple scales: Although monocultures usually mean one crop species growing over an outsized space...monocultures can exist at multiple levels, from the species to the variability to the gene. Peasant seed varieties are population varieties: populations are simply a gaggle of plants of one variety, maintained under an equivalent cropping conditions.

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