Dear Editor,

We are pleased to submit a revised version of our manuscript C*ultural Incubators and Spread of Innovation* for consideration for publication in the Human Biology special issue “Approaches to Modeling Demic and Cultural Diffusion”.

All points raised by the reviewers were requests of minor rephrasing which we believe does not require a point-by-point response. We list below only those issues that might require some more detailed explanation.

Yours faithfully,

Enrico Crema & Mark Lake

Reviewer #4:

*Page 18  
“there is a positive correlation between increasing population size and the rate at which payoff / success-biased social learning can drive cultural evolution” It seems to me that the correlation is between D, density, and cultural evolution. For instance, one could increase population size and world size and not see the effect because D would remain the same.*

We think that the results of Powell et al 2009 shows the correlation of both density and population with cultural evolution. Their figure S1 show dominant effect of absolute population size with less than 50 subgroups, and a stronger effect of density for larger settings of G. We rephrased to make this point clearer.

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*“In other words, the sample pool is simply the entire population minus the focal individual, and thus by altering k we are effectively altering the population size. In this way the results can be compared with those obtained by Shennan (2001) and Henrich (2004)”*

*What they are doing sounds similar to these studies, but I’m not sure it can be directly compared to them. You see, Shennan varies N/4 but he keeps k=5 in all cases. Their study is much closer to Henrich’s. In that he varies the number of social learners, N, but assumes that they all learn from the same individual. So in his case, he does not vary k at all, it is always equal to the size of the previous generation, which is also the size of the learner generation.*

We acknowledge that the comparison is not direct but focused on an interest in the total population size. We specified this point in the text.

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*P(loss of B)= z(1-z/k+c-cz/k)^k*

*I do not think it will really impact there results, but is there also a non-zero chance that the innovator who learns from someone else will happen to acquire the best variant that the non-innovator came up with due to convergence? So the first z term might be modified to something like (z-c) or (z-cz/k)...I haven’t thought this through all the way, so those might not be correct.*

We disagree. The scenario described by the reviewer is applicable only in case of an overlapping generation model. Here we consider an initial condition with 1 individual with trait B and N-1 individuals with trait A. Since the transmission is based on this state of the system (which represents the previous generation), none of the N-1 agents have innovated yet, and hence for the individual already possessing trait B any “successful” social learning will lead to the adoption of A.