From: merhav@ee.technion.ac.il
Subject: Re: Your recent arXiv post 1507.01537 : Identifying Functional Thermodynamics ...
Date: July 17, 2015 at 5:56 AM
To: dibyendu.mandal@berkeley.edu, abboyd@ucdavis.edu, chaos@ucdavis.edu

P.S. I should further clarify that in my paper, the model under consideration induces a memoryless channel from the input bits to the output bits, yet the extended upper bound on the extracted work in section 4 (accounting for correlations) is valid in much greater generality: it holds whenever the current output bit statistically depends only on the past and present input bits (but not on past output bits), which virtually means full generality.

BTW, the joint entropy difference upper bound is not always tighter than the individual entropy difference upper bound. In my setup, for instance, it is the other way around.

Best regards,
Neri

Quoting merhav@ee.technion.ac.il:

> Dear professors Boyd, Mandal, and Crutchfield,
>
> I am reading with interest your above paper, and I have a comment if I may: On page 2, left column, in the second to the last paragraph, you cite my recent paper [48], (which meanwhile has been published in JSTAT on June 30: http://iopscience.iop.org/1742-5468/2015/6/P06037/article), among several other works that "neglect correlations in the information-bearing components ...". It is rather imprecise to include my paper among those with such a property. In that paper, I am extending the findings of the Mandal-Jarzynski model (reference [43] in your paper) in a variety of directions, one of which allows *arbitrary* correlations among the incoming bits. In fact, one of my results in [48] (see section 4 therein) is essentially the same as your equation (4), which you refer to as one of your main results. Moreover, I assume there nothing about the joint distribution of a string of ℓ bits, not even stationarity, as you do (since I am not taking the limit of ℓ to infinity). Also, in the last section of [48], I am even extending the results to arbitrary *deterministic* input sequences, where the input entropy is replaced by its Lempel-Ziv complexity (a term that comes universal data compression theory). Yet another direction of extension, in the same paper, goes beyond the binary alphabet (section 6 therein) and allows any finite alphabet. Finally, I am also using generalized notions of entropy to bound the extracted work (section 5).
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> I would appreciate it if you gentlemen read my paper slightly more carefully and make a more precise comparison with my work.
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> Very truly yours,
> Neri Merhav
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