**Institutions**

A class of ensembles can be defined for which the EX includes the acceptance of a norm formation. Amongst the subclasses of this we shall seek to define a class of ‘institutions’ that is suitable to play the theoretical role assigned to institutions in HLSTs (but without assuming that those theoretical roles in any particular HLST are well-defined or reflective of sociological reality.) In sociological theories institutions are generally reckoned to be significant features of a society, and there seems to be some primitive notion that underlies the use of the term, but as is often the case the precise definitions offered cover a range of related possibilities. The *Stanford Encyclopedia of Philosophy* (Miller, S. 2011, *s.v.* ‘Social Institutions’, ¶1) provides a reasonable overview of the issues and begins by referring to a pair of representative definitions. The first by J. Turner (1997, The Institutional Order, New York: Longman, p. 6): “a complex of positions, roles, norms and values lodged in particular types of social structures and organising relatively stable patterns of human activity with respect to fundamental problems in producing life-sustaining resources, in reproducing individuals, and in sustaining viable societal structures within a given environment.” And the second by Rom Harré (1979, Social Being, Oxford: Blackwell, p. 98): “An institution was defined as an interlocking double-structure of persons-as-role-holders or office-bearers and the like, and of social practices involving both expressive and practical aims and outcomes.” From such evidence, the consensus seems to be that an institution is a set of norms, rules of behaviour, etc. (i.e. a norm formation) that creates a structure of interacting roles into which participants in the institution fit, and which is seen to have the function of achieving some end (whether or not it also has other functions.)

***Fundamentals of Institutions***

The interactions defined by the norm formation have effects on the individual agents in the ensemble but they are defined in terms of subsets of the ensemble. The norm formation that is constitutive of the ensemble describes its functions and the means by which they are to be performed. Moreover, the rationality of any such norm formation will be judged by the consistency of its propositions with the supposed functions to be performed. However, the fact that there is a supposed ‘function’ for an institution is *not* essential to its sociological characterization. That essential character is rather the system of interactions and roles that are created by the norm formation that characterizes the ensemble. In what follows therefore, institutions will be defined in terms of their sociologically relevant characteristics in the first place, and may then be tested for satisfactoriness in the theories in which institutional entities have a place. So:

Let *X* be a set of agents, *R* = {*r1*, …, *rn*}  2*X* with (*x*  *X*) (*ri*  *R*) [*x*  *ri*], *N* a norm formation.

*Î* = (*X*, *R*, *N*) is an Institution if

* + 1. *N*  *NO*(*X*)

» *Every member of X accepts N (i.e. X*  *K(N))*

* + 1. (*ri*  *R*) (*n*  *N*) (*rj*  *R*) (*x*  *ri*) (*Cx*  *x*) (*cx*  *Cx*) (*y*  *rj*)

[*g*(*n*, *cx*) & *e*(*Ax*(*qx, cx*), *y*)]

» *For every set of agents, ri, there is a norm, n, and another set, rj, such that for any member, x, of the first set there is a set of contexts governed by n and actions by x in that context (which are governed by that norm) have an act effect on some members of the second set.*

*Briefly: an institution is a set of sets of agents for which some interactions between members of those sets, in virtue of being members, are governed by specific norms accepted by all members.*

* |*Î*| = *X* is the membership of *Î*
* *R*(*Î*) = *R* is the Roleset of *Î*. The elements of *R*(*Î*) are the Roles of *Î*
* *N*(*Î*) = *N* is the Ruleset of *Î*. The elements of *N*(*Î*) are the Rules of *Î*
* It is not explicitly stated here, but in most cases the roleset will be defined – at least implicitly – by the ruleset.

Let *Î* = (*X*, *R*, *N*) be an institution, *ri*, *rj*  *R*. Write *ri*, *rj**N* iff

(*n*  *N*) (*x*  *ri*) (*Cx*  *x*) (*cx*  *Cx*) (*y*  *rj*)

 [*g*(*n*, *cx*) & *e*(*Ax*(*qx, cx*), *y*)]

» *There is a norm in N such that for any x in ri in contexts governed by that norm, x’s action (which is governed by that norm) has an act effect on some y in rj.*

*Briefly; ri and rj are roles whose relations are governed by a norm*

* Read this as *ri* Acts On *rj* Under *N* (or *ri* Acts On *rj* In *Î*)
* *N*: *ri*  *rj*, or, if the action element is part of a graphical representation of a collection of actions all governed by the same norm formation, then let *N* be a label for that representation.
* Alternatively, *Î*: *ri*  *rj*
* Note that this is modelled on the definition given for agent interactions
* *IRAD*(*Î*) = {<*ri*, *rj*>: *ri*, *rj*  *R*(*Î*), *ri*, *rj**N*}, the Institutional Role Action Diagram.

Let *Î1* = (*X1*, *R1*, *N1*) and *Î2* = (*X2*, *R2*, *N2*) be institutions.

1. If (*r*  *R1*) (*q*  *R2*) *q*  *r* then *Î2* Supports *Î1*
2. If (*r*  *R1*) (*q*  *R2*) *q*  *r* then *Î1* and *Î2* Intersect

|  |
| --- |
| **Examples:**A typical institution is the Family. Now the family, like many other institutions – and all the most interesting ones – has a vast number of constitutive norms, most of them informal or unexpressed, and which differ from instance to instance of the institution. The family in Saudi Arabia or China is a different institution from the family in Australia. It’s certainly also true that different versions of the institution are to be found within what generally count as social boundaries: for example, the family of Black-Americans is different from the family of Ozark Americans. The subdivisions of normative typology can be made presumably down to an arbitrarily low level if we assume that the only reasonable way to operationalise the concept of belief or desire is to infer it from the behaviours that they are supposed to produce in an intentional agent. (The nature of the constitutive norms is a vital topic of sociological study.) To speak of a family in loose terms, however, is to speak necessarily of an idealised or common or otherwise generalised version. We shall consider only a fragment of a standardised version of the institution of the family here.Let Family be *Îfamily* = (*X*, *Rfamily*, *Nfamily*)*X* is the general population of the society in question. *Nfamily* = {*n1*, *n2*, *n3*, *n4*, …} where*n1* = ‘If a man and woman have a child then they should be the father and mother of that child’*n2* = ‘Parents don’t have sex with their children’*n3* = ‘Parents protect their children’*n4* = ‘Parents should be married’…* Note that the norm formation proposed for this institution includes explicit definitions for some of the role memberships. That is not necessarily true of all institutions, for which the norm formations may appeal to concepts defined elsewhere.

 *Rfamily* = { *r1*, *r2*, *r3*, *r4*, …} where*r1* = Fathers = {*x*: *x*  *X* & *Male*(*x*) & (*y*  *X*)[*Offspring\_of*(*y*, *x*)]}*r2* = Mothers = {*x*: *x*  *X* & *Female*(*x*) & (*y*  *X*)[*Offspring\_of*(*y*, *x*)]}*r3* = Parents = {*x*: *x*  *r1* *x*  *r2*}*r4* = Children = {*x*: *x*  *X* & (*y*  *X*)[ *Offspring\_of*(*x*, *y*) ])}*r5* = Married Persons …* Membership of the role of ‘Married Person’ is not defined by the norms included in the fragment above.
* The predicate functions used above are undefined, but have the obvious definitions.

It is clear even from the fragment presented that institutions do not exist in isolation. It may turn out that each institution essentially depends for its character upon its position in a system of interlocking institutions – in the same way that the meanings of words in a language can hardly be said to exist in isolation. To illustrate the systematic nature of institutions we present a fragment of a formal model of the institution of Marriage.Let Marriage be *Îmarriage* = (*X*, *Rmarriage*, *Nmarriage*)*X* is the general population of the society in question. *Nmarriage* = {*n1*, *n2*, *n3*, *n4*, …} where*n1* = ‘parents should be married’*n2* = ‘A man and a woman who are married have sex only with each other’*n3* = ‘A married couple cooperate’*n4* = ‘A marriage is performed by a celebrant’… *Rmarriage* = { *r1*, *r2*, *r3*, *r4*, …} where*r1* = Males*r2* = Females*r3* = Celebrants = {*x*: *x*  *X* & (*y,z*  *X*)[ *Marries*(*x*, *y, z*) ])}*r4* = Married Persons = {*x*: (*y,z*  *X*)[ *Marries*(*y*, *x, z*) ]}*r5* = Parents…* Here membership of the role of ‘Married Person’, which was not defined in the institutional norms of marriage above, is defined by the institutional norms of marriage.
* *r5*  *Rfamily* = *r4*  *Rmarriage* (amongst others) so *Îfamily* intersects with *Îmarriage* and these two institutions support one another.
* Note that the role of married persons might very well be defined by the appropriate norm formations as {*x*: (*y,z*  *X*)[ (*Male*(*x*)*Female*(*z*)) & *Marries*(*y*, *x, z*) ]} which indicates how the recent controversy over ‘same-sex marriage’ may be interpreted as a controversy not just over moral rights but over the very constitution of the institution of marriage.
* Note that in the two examples given, the participants in the institutions are assumed to be the general population. That is simply a convenience and is probably not accurate.
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***Institutional Functions***

Questions must arise as to the degree to which any set of norms can be unambiguously identified as forming a natural basis for an institution. Two observations may be made with respect to this: first, that the identification of such norm formations is an appropriate study of sociologists and will be sensitive to the type of theory being proposed (as it is unlikely that institutions form natural kinds;) and second, that the most profitable direction of enquiry into the ‘essence’ of any institution must be toward the function of the institution.

*Ideal Functions*

Let *X* be a set of agents in the general population of the society in question.

Let *Î* = (*X*, *R*, *N*) be an institution as defined.

We define an Ideal Institutional Context Consequence Function (IICCF) as:

*CI*(*Î, cX,0*) = *cX,1* iff

(*x*  *X*)[ *g*(*N*, *cx,0*) [(*ax,0* = *Ax*(*qx,0*, *cx,0*))  (*N,cx,0*(*ax,0*)*N,cx,0*(*ax,0*)]]  *C*(*aX,0*, *cX,0*) = *cX,1*

» *The consequent context is what results when every member of the institution when in contexts governed by the institutional norms behaves accordingly*

* In the above we have made the obvious extension to the context consequence function:

*C*(*aX,0*, *cX,0*) = *x**X C*(*ax,0*, *cX,0*).

* Although the IICCF uses the same function letter as the standard context consequence function, the functions are easily distinguished by the arguments.
* The function is an *ideal* function since the definition describes the context consequence of every relevant agent doing as the institutional norms require. This is never likely to be the actual situation even if every agent was an acceptant of those norms – unless the norms simply describe the actions of every agent, in which case it will apply by fiat; but we discounted that interpretation of norms in the relevant chapter.

What we mean by the function of an institution may not, however, be best captured by defining it as the immediate consequence of the relevant agents acting consistently with its norms. It may be that given certain sorts of contexts as starting points, the immediate consequence of the operation of the institution does not achieve the intuitively felt ‘function’ of that institution. Thus we may seek a definition that captures the notion of ‘in the long run’.

We describe the Ideal Institutional Context Consequence Sequence (IICCS) as:

*CI*(*Î, cX,0*) = <*cX,i*: 0  *i*, *cX,i*+*1* = *CI*(*Î, cX,i*)>

» *The sequence of contexts that results from repeated operations of the IICCF beginning with the context cX,0.*

One possible notion of function might then be:

*c* is an ideal function of *Î* iff (*i*)[*c*  *CI*(*Î, cX,0*)*i*]

» *c is a propositional description of a relevant fact about X that occurs at some point in the IICCS*

However, depending on the extent of the class of relevant facts that are described by the elements of the context variable, this might have the consequence of making trivialities or human universals be the functions of any institution. For example, the fact that humans have two sexes might on this definition be a consequence of the institution of Marriage, since a description of that fact might well occur in every context of the ideal institutional sequence. This is unlikely to be a satisfactory notion.

Moreover, the functions or outcomes in which we are interested may well be logical consequences of the facts described in the context variables, rather than appearing explicitly as elements of those variables

Define instead an Ideal Strict Institutional Context Consequence Function (ISICCF) as:

*CIS*(*Î, cX,0*) = *cX,1* iff *cX,1* = { *c*:

» *The set of all propositional descriptions, c, of relevant facts about X, where*

1. ( (*x*  *X*)[ *g*(*N*, *cx,0*) [(*ax,0* = *Ax*(*qx,0*, *cx,0*))  (*N,cx,0*(*ax,0*)*N,cx,0*(*ax,0*)]] 

*c*  *C*(*aX,0*, *cX,0*) ) &

» *c is one of the descriptions that results when every member of the institution when in contexts governed by the institutional norms behaves accordingly, and*

1. ( (*X’*  *X*)(*x*  *X’*)(*ax,0* *x*)[ *g*(*N*, *cx,0*) & ~(*N,cx,0*(*ax,0*)*N,cx,0*(*ax,0*)) 

*c*  *C*(*aX,0*, *cX,0*) ] ) }

» *for at least some members of the institution when in contexts governed by the institutional norms, there are actions forbidden by the norms which if taken would result in c not describing them.*

And the Ideal Strict Institutional Context Consequence Sequence (ISICCS) as:

*CIS*(*Î, cX,0*) = <*cX,i*: 0  *i*, *cX,i*+*1* = *CIS*(*Î, cX,i*)>

In fact according to the normal usage of the term ‘function,’ we have already defined an ideal institutional function in the definition of the ideal strict institutional context consequence function; however, the use of the term in the discussion of institutional functions generally is best understood as a predicate or predicates, which we may define thus:

A proposition, *c*, is an Ideal Institutional Function of *Î* given *cX,0*, and write *I*(*Î*, *cX,0*, *c*), iff

(*i*)[ *CIS*(*Î, cX,0*)*i* ⊢ *c*] or

» *c is a logical consequence of the context of X that arises at some point in the ISICCS*

* where *cX,0* is understood we may disregard it
* An ideal institutional function *c* is Transient if
(*i*) [(*CIS*(*Î, cX,0*)*i* ⊢ *c*) (*j*>*i*) [*CIS*(*Î, cX,0*)*j* ⊬ *c*] ]
* An ideal institutional function *p* is Recurrent if
(*i*) [(*CIS*(*Î, cX,0*)*i* ⊢ *c*) (*j*>*i*) [*CIS*(*Î, cX,0*)*j* ⊬ *c*] ] &

(*i*) [(*CIS*(*Î, cX,0*)*i* ⊬ *c*) (*j*>*i*) [*CIS*(*Î, cX,0*)*j* ⊢ *c*] ]

Note that every recurrent institutional function is transient.

* an ideal institutional function *c* is Enduring if
(*j*) (*i*>*j*) [*CIS*(*Î, cX,0*)*i* ⊢ *c*]

*Real Functions*

Most of the hard definitional work has now been done and we can proceed more quickly through definitions of more immediately useful institutional characteristics. The ideal function of an institution is of interest for someone who wishes to design an institution or who wishes to understand the intention of one who plans an institution, but it is unlikely to accurately describe the function of the institution as it actually operates. That function depends upon being an acceptant – or behaving as an acceptant – of the norms that constitute the institution, but we accepted that for various reasons these norms might not always be followed even by an acceptant. Should this be the case, or should some other interference in the ‘ideal’ action of the acceptant of the institutional *N* occur, the ideal function may fail. We need therefore to speak of the *actual* institutional functions.

Let *X* be a set of agents in the general population of the society in question.

Let *Î* = (*X*, *R*, *N*) be an institution as defined.

We define an Institutional Context Consequence Function (ICCF) as:

*C*(*Î, cX,0*) = *cX,1* iff

(*x*  *X*)[ *x*  *K*(*N*) & *ax,0* = *Ax*(*qx,0*, *cx,0*)]  *C*(*aX,0*, *cX,0*) = *cX,1*

» *The institutional context consequence function describes (obviously) the real consequence of the institution.*

* In the above we must take into full account the brief considerations made when introducing norm-directed behaviour that the action function will need to account for ‘degrees of belief’ in the norms, possible irrationality, possible epistemological limitations, etc.

We describe the Institutional Context Consequence Sequence as:

*C*(*Î, cX,0*) = <*cX,i*: 0  *i*, *cX,i*+*1* = *C*(*Î, cX,i*)>

Define a Strict Institutional Context Consequence Function (SICCF) as:

*CS*(*Î, cX,0*) = *cX,1* iff *cX,1* = { *c*:

» *The set of all propositional descriptions, c, of relevant facts about X, where*

1. ( (*x*  *X*) [ *x*  *K*(*N*) & *ax,0* = *Ax*(*qx,0*, *cx,0*)]  *c*  *C*(*aX,0*, *cX,0*) ) &

» *c is one of the descriptions that results from the actions of members of the institution, and*

1. ( (*X’*  *X*)(*x*  *X’*) [ *x*  *K*(*N*) & *ax,0* = *Ax*(*qx,0*, *cx,0*)  *c*  *C*(*aX,0*, *cX,0*) ] ) }

» *for at least some members of the institution if they did not accept the norms of the institution then the actions taken would result in c not describing them.*

And the Strict Institutional Context Consequence Sequence (SICCS) as:

*CS*(*Î, cX,0*) = <*cX,i*: 0  *i*, *cX,i*+*1* = *CS*(*Î, cX,i*)>

Which leads us to the definitions of appropriate predicates as:

A proposition, *c*, is an Institutional Function of *Î* given *cX,0*, and write **(*Î*, *cX,0*, *c*), iff

(*i*)[ *CS*(*Î, cX,0*)*i* ⊢ *c*] or

» *c is a logical consequence of the context of X that arises at some point in the SICCS*

* The obvious modifications give us also transient, recurrent, and enduring institutional functions.

*Intentional Functions*

When (*x*  *X*)[*Dx*[**(*Î*, *cX,0*, *c*) ]] we may speak of *c* being the Desired Institutional Function (DIF), *D*(*Î*, *cX,0*, *c*)

If (*x*  *X*)[*Bx*[**(*Î*, *cX,0*, *c*) ]] then *c* is the Believed Institutional Function (BIF), *B*(*Î*, *cX,0*, *c*)

The concepts of manifest and latent function were introduced into sociology by Robert K. Merton (1957, *Social Theory and Social Structure*, New York: Free Press of Glencoe, p. 51). He states there that manifest functions are “those objective consequences contributing to the adjustment or adaptation of the system which are intended and recognised by participants in the system,” while latent functions are simply “those which are neither anticipated nor recognised.” They can be defined using the tools developed above. Thus:

If **(*Î*, *cX,0*, *c*) & *D*(*Î*, *cX,0*, *c*) & *B*(*Î*, *cX,0*, *c*) then *c* is a Manifest Institutional Function, *M*(*Î*, *cX,0*, *c*)

If **(*Î*, *cX,0*, *c*) & ~*D*(*Î*, *cX,0*, *c*) & ~*B*(*Î*, *cX,0*, *c*) then *c* is a Latent Institutional Function, *L*(*Î*, *cX,0*, *c*)

* Whether this is exactly what Merton had in mind however is open to dispute (Helm, P. 1971, ‘Manifest and Latent Functions’ *The Philosophical Quarterly*, v. 21, no. 82, pp 51-60) since *X* (the relevant set of agents) is not defined, it isn’t known whether the universal quantifier is intended here, it’s not clear what is intended by ‘unintended,’ etc.
* Nor are there distinctions made between transient, recurrent, or enduring functions.
* Merton also desired to distinguish between functions and ‘dysfunctions’, which do not assist the system to adapt and adjust to the environment – but there is no such distinction made above.
* In short, it isn’t obvious that this is a necessary or useful pair of institutional functions

If **(*Î*, *cX,0*, *c*) & ~*D*(*Î*, *cX,0*, *c*) then *c* is what Merton would call an ‘unintended consequence,’ and in the current terminology we might label it the Undesired Real Institutional Function.

***Institutional Norms***

From the above it seems that it is possible to use the notion of action governed by norms to define a ‘function’ of an institution. It is also possible to use the notion of the function of an institution to determine the ‘essential’ norms of an institution. The point of this is to attempt to establish the boundaries of an institution. For example, referring to the examples above, does the institution of Marriage as understood by the relevant agents exclude, normatively, homosexual pairings? Does the institution of Family allow polyamorous unions or divorces?

Let *c* be such that **(*Î*, *cX,0*, *c*) for *Î* = (*X*, *R*, *N*).

Suppose that

1. (*N1*  *N*)**(*Î1*, *cX,0*, *c*) for *Î1* = (*X*, *R1*, *N1*) and
2. (*N2*  *N1*) ~**(*Î2*, *cX,0*, *c*) for *Î2* = (*X*, *R2*, *N2*)

We may say that *N1* is a Minimal Norm Formation for the function *c* of the institution *Î*

* There is no reason to think that any minimal norm formation is unique.
* Note that the functions of an institution are not assumed to be unique, and the set of minimal norm formations for *c* in *Î* will also vary with that variable.