The Coherence and Flexibility of the Institutional Order:
The Role of Abstraction and Modularity

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Abstract

Ludwig Lachmann, throughout his career, wrestled with the problem of intertemporal coordination in a world of heterogeneous expectations. He emphasized the unknowability of the future, yet also recognized that coordination of plans still occurs. Lachmann pointed to institutions as providing the key link between expectations and coordination. But this poses the additional problem of the coherence and flexibility of the institutional order. While Lachmann provides many tantalizing clues on how to reconcile the contrasting needs for coherence to support coordination and flexibility to accommodate unforeseen change, he fails to provide a unified theory upon which to build.

We recast Lachmann's explanation of the institutional order in terms of the concepts of abstraction and modularity borrowed from computer programming. Economists, largely under the influence of Herbert Simon, have examined the role of modularity, but they have ignored the twin concept of abstraction. Simon emphasizes the role of modularity in decomposing complex systems, but programmers also emphasize the role of abstraction in composing them. The programmers' challenge of composition can be viewed as analogous to economists' problem of plan coordination. We argue that not only do the concepts of abstraction and modularity provides a better foundation for Lachmann's theory of the institutional order, but they provide a natural link to Hayek's work on abstract orders.

Introduction

Ludwig Lachmann, throughout his career, wrestled with the problem of intertemporal coordination in a world of heterogeneous expectations. Lachmann emphasized the unknowability of the future, yet also recognized that coordination of plans still occurs. During the decade of the 1960s, He attempted to develop a theory of institutions that could account for coordination of plans in a dynamic world of heterogenous expectations. This exploration culminated in his 1970 book, *The Legacy of Max Weber*.

In that book, Lachmann sketches an intriguing portrait of the role of institutions as orientation points for coordinating planned action. But this, Lachmann notes, creates the further problem of how the institutional order can adapt to change, while still providing enough coherence for coordinating action. Lachmann's attempt at a solution draws heavily on the tools of complementarity and substitutability he first developed (Lachmann 1947) in the context of his theory of capital. While Lachmann provides many tantalizing clues on how to reconcile the contrasting needs for coherence to support coordination and flexibility to accommodate unforeseen change, he fails to provide a unified theory upon which to build.

We suggest that a better approach to explaining the coherence and flexibility of the institutional order can be found by borrowing the concepts of abstraction and modularity from computer programming. Economists, largely under the influence of Herbert Simon, have examined the role of modularity, but they have ignored the twin concept of abstraction. Simon emphasizes the role of modularity in decomposing complex systems, but programmers also emphasize the role of abstraction in composing them. The programmers' challenge of composition can be viewed as analogous to economists' problem of plan coordination. We argue that not only do the concepts of abstraction and modularity provides a better foundation for Lachmann's theory of the institutional order, but they provide a natural link to Hayek's work on abstract orders.

In part one, we briefly sketch the development of Lachmann's thought highlighting the development of his concern with questions of plans, process, and expectations. Part two, explores how Lachmann attempted to develop his theory of the institutional order to provide a degree of coherence in a world of unexpected change. Part three suggests how abstraction and modularity can provide a stronger foundation for his theory.

I. The Early Development of Lachmann's Thought – A Quick Sketch

Lachmann as an Émigré Scholar

Hagemann (2007), in his work on German-speaking émigré economists, distinguishes between "first generation" and "second generation" émigrés. First-generation émigrés were those already established in academia; second-generation émigrés were younger students who had to finish their education outside Austria and Germany. Lachmann falls on the borderline between the two groups: Lachmann received his doctorate in 1930, but he was not yet established in academia when he emigrated in 1933. Lachmann completed his doctorate, but not his habilitation. Lachmann, upon arrival in England, enrolled in the London School of Economics, where he received a master's degree in 1935.

For many émigrés, including Lachmann, this experience provided them with a 'double education,' an education in two traditions with the potential for productive cross-fertilization of ideas. Lachmann's first

education was at the Friedrich-Wilhelms-University of Berlin from 1923 to 1930, where he completed his dissertation, *Fascistischer Staat und korporative Wirtschaft*, under the supervision of Werner Sombart and Ignaz Jastrow. While it would be misleading to characterize Lachmann's education in Berlin in terms of the older *Methodenstreit* divide between theory and history, it is clear from Lachmann's writings emanating from this period that his concerns were more those of social economics[1], than pure theory. They show a broad interest in the social, legal, and political conditions of economic action, not just the narrow concerns of pure theory. However, this does not mean that he was uninterested in theory, he was especially aware of the German language debates over dynamics in which Schumpeter played a major role, and was nurturing a growing interest in the economics from Vienna.

Lachmann's second education took place in the melting pot of economic ideas occurring at the London School of Economics in the 1930s. Lachmann, in many ways, can be viewed as a product of the Robbins-Hayek seminar.[2] Howson (2011:250) remarks that "1933-1936 were peak years of the seminar for its intellectual excitement and its contributions to the development of economic theory." It was this environment that became Lachmann's new intellectual home in exile.

Hayek's Early Influence on Lachmann's Research Agenda

Hayek, more than anyone, shaped Lachmann's research agenda during the critical 1933-1936 years. Austrian trade cycle theory was being heavily discussed during this time at the Robbins-Hayek seminar, and Hayek also ran a separate seminar on capital theory for his graduate students (Howson, 2011:250), that Lachmann seems likely to have attended. Lachmann's master's thesis (1935) explored the question of secondary depressions, a major concern of Hayek's (1933).

In addition, two debates that Hayek was engaged in seem to have captured Lachmann's attention. First, the debate over expectations and intertemporal equilibrium. On December 7, 1933, Hayek (1935) delivered his famous "Copenhagen lecture," where, among other topics, he responded to Myrdal's criticism of his neglect of expectations. Hayek's lecture was part of an ongoing debate over how to develop an intertemporal equilibrium without unreasonable epistemic requirements. Participants in the German language part of the debate included contributions from Hayek, Hicks, Myrdal, and Morgenstern. Lachmann contributed to the debate with his paper (1937) "Preiserwartungen und intertemporales Gleichgewicht." [Price Expectations and Intertemporal Equilibrium] The themes of plans, process, and expectations emerging from this debate would play a central role in Lachmann's subsequent research.[3]

The second of Hayek's debates that made an impression on Lachmann was his debate with Pigou over 'maintaining capital intact'. Hayek in his paper, (1935) "The Maintenance of Capital," challenged the notion of treating capital as a homogeneous entity, opening the way for a subjective appreciation of heterogeneous capital.[4]

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[1] Tribe (2014).

[2] Hayek (1992: 53-54) viewed the joint Robbins-Hayek seminar as the third great catalyst in the development of Austrian thought, after Böhm-Bawerk' seminar, and Mises's *Privatseminar*.

[3] Giocoli (2003) characterizes this debate as "the escape from perfect foresight." See also, Zappia (2010).

[4] White (2016:xxx-xxxi) writes, "Hayek sought to point out the analytical limitations imposed by treating the stock of capital goods as a homogeneous mass. Such an approach cannot be used to study how mismatched intertemporal plans can bring about an unsustainable configuration of capital goods, which for Hayek was the key to understanding business cycles. The essay thereby reinforced the central message of Hayek's 1933 Copenhagen

Plan, Process, and the Escape from Perfect Foresight

One result of Lachmann's involvements in the interlocking debates over intertemporal equilibrium, capital theory, and the trade cycle was his growing dissatisfaction with equilibrium dynamics.[5]

Lachmann increasingly saw the way forward in terms of plan and process (Bode:1943). By the end of the decade, Lachmann was encouraged by the fledgling efforts to develop a dynamic process analysis, that could be found in the works of Hayek (1937, 1941), Hicks (1939), Lindahl (1939) and Lundberg (1937). He saw these works pointing toward a "a causal genetic method of studying economic change," designed to "supersede, or at least supplement" equilibrium analysis. (1956:39).

Hayek (1937) redefined equilibrium as plan coordination, but emphasized that this depends on the diverse knowledge of the agents. Hayek's recognition of the limits of the pure logic of choice, and the need to supplement it with an investigation into the empirical component of individual learning would play a crucial role in Lachmann's subsequent return to the verstehen approach of Max Weber.

Lachmann began to reevaluate the methodological foundations of his approach in his 1943 article, "The Role of Expectations in Economics as a Social Science." He argues that traditional equilibrium methods (the pure logic of choice) is inadequate for dealing with the inherent indeterminism of expectations. What is needed is a theory of interpretation: "In a properly dynamic formulation of the economic problem all elements have to be subjective, but there are two layers of subjectivism … the subjectivism of wants, and the subjectivism of interpretation." (1943:18).

II. Institutions: The Legacy of Max Weber

From Expectations to Institutions

Lachmann (1943) stressed the importance of expectations, and the need to supplement it with a subjectivism of interpretation. Lachmann (1959) revisited this question when he contributed a paper to a symposium on his friend Shackle's theory of expectations. Lachmann praises Shackle's challenge to determinism, and his criticism of the 'physicists' notion of time. However, he was highly critical of the discontinuous nature of Shackle's theory, which gave no scope to the continuity of the mind, and the subjectivism of interpretation. As Lachmann warns, "But if we are to take Professor Shackle's thesis literally, there could be no testing the success of plans, no plan revision, no comparison between ex ante and ex post." (1977 [1959]:84). Shackle's model leaves no room for the subjectivism of interpretations that sheds light on the process of learning. As Lachmann tells us, "We can, and occasionally do, learn from experience." (1977 [1959]:84).

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lecture … namely that monetary forces can create a business cycle (investment boom followed by a bust) by disturbing intertemporal plans."

[5] As Lachmann (1954:138) was later to reflect, "Throughout our two decades [1933-1953] we notice a growing feeling of dissatisfaction with the traditional equilibrium methods … and a strong desire to make economic analysis 'more dynamic'." "The real objection to the equilibrium method", he goes on to tells us (1954:39), "is that it must ignore the process by which men acquire and digest new knowledge…."

Two years later, Shackle (1961) responded to Lachmann's criticisms, saying that his characterization of him denying continuity was unfair: "But most certainly I do think exactly this, certainly I have always thought of each moment as the child of its predecessor in the decision-maker's mind, inheriting characters though also undergoing mutations." (1961:38). But as Koppl (1994) points out, Shackle's response does not really address Lachmann's concerns. However, Koppl (1994:294) argues that "Lachmann seems to have accepted the response and dropped any doubts he might once have harbored about Shackle's subjectivism."

But this doesn't seem to be the case. Lachmann's response, rather than meek acceptance, was to spend the next decade investigating the role of institutions in providing continuity by balancing the indeterminacy of expectations and the subjectivism of interpretations.[6]

Lachmann, as early as his 1950 inaugural lecture at the University of Witwatersrand, had already begun to point the way:

> "But in the social sciences where, of course we also have to assume some continuity of environment, … Whether we turn on the wireless, post a letter, or wait for a train, in each case our conduct is guided by an implicit assumption that the purposes in the pursuit of which men yesterday operated the social environment in which we live, will continue to inspire them today. The probability we assign to such assumptions is evidently something entirely different from that which we expect the moon to rise tonight. A general strike would upset our assumptions in the former case, while Nature, broadly speaking, does not go on strike." (Lachmann, 1950: 233-234)

By 1970, in *The Legacy of Max Weber*, we can see that Lachmann believed he had found "some continuity of environment" in the institutional order.

The Mysterious Suggestion of the Plan

Lachmann developed his theory of institutions and of an institutional order in a roundabout approach by focusing on Max Weber's treatment of institutions. It is here that we see Lachmann's 'first education' reemerging. But to modern economists not versed in Weber's social economics, the approach is often puzzling.[7]

In the first chapter, Lachmann begins with the "mysterious suggestion that the ideal type be replaced in Weber's analysis with the notion of a 'plan'" (Maclachlan 2016:10). His attempt to recast Weber's ideal type in terms of plan was an attempt to introduce an analytical concept that remains close to Mises' purposive human action, but allows one to examine the contingent empirical reality associated with it.

The concept of a "plan," as we have seen, emerged as a key construct for Lachmann from his involvement during the 1930s in the attempt to develop an intertemporal equilibrium construct based on non-heroic assumptions about knowledge and foresight.

When the research program of creating a dynamic, process theory based on the notion of plan analysis

[6] See especially Lachmann (1962, 1963, 1966, 1970); he continued to develop his views in Lachmann (1979 & 1991).

[7] Langlois (1986), Horwitz (1998), and Foss & Garzarelli (2007) help clarify this puzzlement.

died after the end of the war, Lachmann had turned to Mises in attempt to provide a better foundation for this approach, taking seriously Hayek's claim that progress in economics is based on the further extension of subjectivism (and Mises's work in particular). This posed a dilemma however since, Lachmann agreed with Hayek's argument in "Economics and Knowledge" that Mises' pure logic of choice ignored the empirical question of learning, which was necessary for plan analysis.

Lachmann saw Weber's work, which he was familiar with from his student days in Berlin, as a way of 'fixing' this error in Mises. The "plan", for Lachmann, broadens Mises's notion of purpose - giving space for the empirical component (learning) and the subjectivism of interpretation, while narrowing Weber's notion of ideal type - better connecting it to human action based on means and ends.[8]

Institutions as Orientation Points

In chapter 2, Lachmann addresses the question of institutions. Human action in society, Lachmann notes, is interaction. An individual's plan must consider the plans of others. For Lachmann, Institutions serve as points of orientation concerning the future actions of others, making those actions a little less uncertain.[9]

Institutions enable a myriad of agents to coordinate their plans by orienting their plans to a common institution. Everyday institutions such as post offices, railways, and banks enable many individuals to coordinate their actions without the need to acquire detailed knowledge of their workings. These institutions provide 'some continuity of environment' that enables plans, at least sometimes, to coordinate.

Coherence and Flexibility of the Institutional Order

But as Lachmann recognizes, relying on institutions to provide points of stability for planning creates its own challenges: what if the institutions themselves change? How do various institutions fit together into an overall order? And finally, how does the institutional order itself change?

To make sense of this Lachmann draws on several analytical distinctions: between designed and undesigned institutions (borrowing from Menger), between fundamental and secondary institutions[10], and between the legal system and the institutional order. Lachmann contrasts the seamless nature of the legal system based on logical consistency with the looser complementarity of the institutional order based on functional specialization.

With these distinctions in hand, Lachmann (1970:90) attempts to answer the question: "How is the need for coherence and permanence reconciled with that for flexibility in the real world?" He offers four devices:

- Frequently mutable secondary institutions based on a "fairly wide sphere" of contractual freedom.

[8] For a criticism of Lachmann's use of "the plan" as analytical category, see Prychitko (1994). While Lachmann's attempt to elevate the concept the plan leaves open many questions, Lachmann, at least, does seem to be aware of many of the challenges of the concept. Cf. Suchman (1987).

[9] For the importance of "orientation to others" in Weber's thought, see Swedberg (2015).

[10] Lachmann initially makes the distinction between external and internal institutions, but recognizes that this does not fully capture the distinction he has in mind.

- Immutable fundamental institutions that support the mutability of secondary institutions.
- Widening of existing institutions to serve new interests without upsetting previous plans
- And, finally, the prohibition of changes which threaten to upset the social order.

III. The Role of Abstraction and Modularity

Lachmann made much progress in explaining institutional stability and change based on the concepts of complementarity and substitutability, yet issues remain. We suggest that Lachmann's defense of the institutional order could be made stronger by borrowing the concepts of abstraction and modularity from computer programming.[11]

Abstraction: A Programmer's Perspective

Economists, influenced by Herbert Simon (1996:183-216), have begun to examine the role of modularity (Garud et al: 2002) in economics. Modularity limits interactions between modules, while allowing for rich interaction within. Simon, with his parable of the watchmakers – Hora and Tempus, showed the benefits of hierarchical decomposition leading to nearly decomposable systems. Hora, who built his watch from stable subsystems (modules), could better withstand interruptions than Tempus who built his watch piece by piece, and had to start from scratch after each disturbance.

However, economists have given much less attention to abstraction.[12] Simon emphasizes the role of modularity in decomposing complex systems, but programmers also emphasize the role of abstraction in composing them. Early attempts by programmers to decompose complex programs through hierarchical decomposition showed that modularity alone was not enough. While providing some benefit in taming the complexity of 'spaghetti-code', the resulting modules proved hard to combine into complex programs, and ill-suited for easy adaptation to changing requirements. Abstraction, by drawing attention to the interface between modules, addresses the issue of composition and change. Both abstraction and modularity are needed.

The programmers' challenge of composition can be viewed as analogous to economists' problem of plan coordination (Miller 2006:23-27; Tulloh & Miller 2006). When programmers write programs, they express plans for computers to execute. In formulating these plans, programmers must make assumptions (form expectations) about future behavior of the system, including the behavior of other programs. When separately formulated plans are composed, conflicting assumptions (divergent expectations) can result in software bugs (plan failure) at runtime. These failures often violate the assumptions that other programs depend on, potentially spreading the corruption through the system. Programmers use various abstraction and modularity mechanism to limit the scope of the assumptions

[11] Van Roy & Haridi (2004: xviii) "Programming a computer is primarily designing and using abstractions to achieve new goals. We define an abstraction loosely as a tool or device that solves a particular problem. Usually the same abstraction can be used to solve many different problems. This versatility is one of the key properties of abstractions."

[12] Langlois (1986) early on recognized the importance of abstractness for Lachmann's theory of institutions. He relates it to Schutz's (1967 [1932]) discussion of typification. Like Schutz, our focus is on the abstractions that the agents create and use, not the abstractions of the theorist. We acknowledge the strong connection of our position to Schutz's, but do not investigate it further in this paper.

that must be made, and to structure these assumptions so they are more likely to be composed without conflict.

Rather than rely solely on hierarchical decomposition, programmers have developed a multi-step process encompassing decomposition, encapsulation, abstraction, and composition.

Decomposition allows programmers to divide complex programs into easy to understand subtasks. Programmers could better organize their assumptions about which subtask was supposed to achieve which purpose. But there remained the issue of what resources each subtask could use to achieve their purpose. Different subtasks could disrupt the plans of other subtasks that were relying on the same resources.

Encapsulation enables programmers to avoid conflicts over common data, by packaging code and data together into encapsulated objects (Liskov & Guttag 2001). The code of each object still manipulates data, but the data it manipulates is now private to that object. When writing the code of such an object—when formulating a plan for how it will use its data to accomplish its purpose—the programmer may now assume that this data is not also being manipulated by other potentially conflicting plans. This discipline enables programmers to create systems in which a massive number of plans can make use of a massive number of resources without needing to resolve a massive number of conflicting assumptions. Each object is responsible for performing a specialized job; the data required to perform the job is encapsulated within the object

Abstraction provides stable points of connection while accommodating a wide-range of change on either side of the abstraction boundary. When programmers carve the functionality of a system into subtasks using only hierarchical decomposition, each provider serves only the specific concrete purpose needed to contribute to its one client. Instead, programmers learned to create opportunities for reuse and polymorphism. For reuse, a provider serves an abstract purpose that multiple clients can employ for multiple concrete purposes. The abstract purpose is represented by an interface. For polymorphism, multiple concrete providers can implement the same abstract service in different concrete ways.

An interface designed to serve the needs of only one client will not help reuse. An interface that exposes implementation details will not help polymorphism. A well-designed interface serves as an abstraction boundary, simultaneously abstracting over the multiple concrete reasons why a client may wish to employ this service and the multiple concrete means by which a provider may implement this service. The interface represents the relatively thin and stable assumptions by which clients and providers coordinate their plans. It provides the “what” that insulates the multiple “whys” of client from the multiple “how’s” of provider plans, and vice versa, so they are freer to evolve separately without disrupting each other’s assumptions.

Encapsulation, by reducing interference, and abstraction, by combining a stable interface that supports great diversity, combine to enable effective composition.

Abstraction and Modularity in the Institutional Order

An abstraction separates the interface from implementation by hiding the details of the implementation behind the interface. Hiding implementation details, frees those who make use of the interface from having to depend on those details. Thus, they are not vulnerable to changes in those details, only to

changes in the interface. While economists worry about the hazards of hidden information, programmers extol the benefits of information hiding (Parnas:1972). Information hiding enables complex patterns of interaction.[13]

Lachmann, independently, recognized the importance of information hiding:

> "Whether we post a letter, wait for a train, or draw a check, our action is in each case orientated towards a complex network of human action of which we know enough to make it serve our ends, though we may know next to nothing about the internal working order of these institutions. We know of course that such an internal working-order exists, but in our everyday life take no interest whatever in its details. We know very well that the Post Office works according to a general plan, but such knowledge as we have about it is usually quite irrelevant to the achievement of our purpose in posting a letter. Only a few aspects of this general plan, perhaps the times of collection and delivery of mail, need be of concern to us." (1970:50)

As this quote shows, Lachmann comes tantalizingly close to recognizing the importance of abstraction and information hiding. His concept of multiple specificity provides another example. The multiple specificity of a capital good means that the good can serve more than one purpose (although not an infinite amount). Programmers refer to the ability of an abstraction to serve multiple purposes as reusability, but abstraction boundaries do not only abstract over the multiple purposes of potential clients, but also over the multiple means of the various providers, what programmers refer to as polymorphism.

In Tulloh & Miller 2006, we showed that abstraction boundaries create abstract relationships between actors, by generalizing across the multiple ends that agents are pursuing, and the multiple means that providers use to serve those ends. The ends (the why's) that agents pursue can vary; just as the means (the how's) that agents use can vary, only the abstraction boundary (the what) needs to remain constant.

We can now answer Lachmann's question of 'How is the need for coherence and permanence reconciled with that for flexibility in the real world?' (1970:.90). Secondary institutions are abstraction boundaries that provide stability with flexibility. Lachmann uses the metaphor of a hinge: "one is tempted to think of the institutional order as an array of hinges: the institutions within each hinge can move a good deal, if within limits, but the hinges themselves cannot." (1979: 253). Abstraction boundaries play the role of the hinges, enabling flexibility on both sides of the boundary. Changes on either side of the boundary will not upset plans so long as the interface does not change.

Moreover, abstraction boundaries can expand to meet new requirements, through what programmers call subtyping. A subtype extends the scope of an existing abstraction boundary by adding additional behaviors. This enables what Lachmann calls the widening of institutions. Since a subtype must fulfill all

[13] Colburn & Shute (2007:169) contrast the use of abstraction in computer science with the use in mathematics: "Mathematics, being primarily concerned with developing inference structures, has information neglect as its abstraction objective. Computer science, being primarily concerned with developing interaction patterns, has information hiding as its abstraction objective." The complex behavior of software systems requires programmers to use abstractions that hide details that are inessential for their particular purpose, but not to neglect them for other purposes for which they are essential.

of the obligations defined by its supertype, it can be substituted in place of its supertype without upsetting the expectations of existing clients for that type. We can adapt to change "not by the creation of a new institution, nor by replacing an old by a new, but by "widening" an existing institution in such a way that it can serve new interests without upsetting the plans which have thus far made use of it." (1970:91).

Hayek's Abstract Order

Lachmann, as suggested above, would have considered himself as working in tandem with Hayek up through the 1940s. While never agreeing in every detail, he was consciously pursuing the same broad research program as Hayek.[14] This began to change in the 1950s when Hayek shifted his attention to broader legal and political issues, and questions of complexity and spontaneous order. Lachmann became suspicious that Hayek was leaving no room for the subjectivism of an active mind. Despite this divergence, however, Hayek's later work on abstract orders share numerous commonalities with Lachmann's sketch of the institutional order. Commonalities that are further highlighted by our reinterpretation of Lachmann's scheme in terms of abstraction and modularity.

Hayek (1973) presents the concept of an abstract order that accommodates both permanence and change. Like in Lachmann's institutional order, it is the order that provides permanence, while the elements can change:

> What can remain constant in such an overall order which continually adjusts itself to external changes, and provides the basis of predictions, can only be a system of abstract relationships and not its particular elements. This means that every change must disappoint some expectations, but that this very change which disappoints some expectations creates a situation in which again the chance to form correct expectations is as great as possible (1973:106)

Where Hayek (1937) spoke of mutual compatibility of plans and perfect foresight, Hayek (1973) speaks of maximal compatibility and adaptation to the unknown.

For Hayek, the abstract rules are the fundamental institutions of society.[15] However, unlike Lachmann, Hayek does not emphasize the abstraction boundaries, but as Hayek tells us the major role of abstract rules is to enable protected domains of action. Lachmann emphasizes information hiding at the interface; Hayek recognizes the important role the abstract rules play enabling encapsulation.[16]

Each provides a missing piece of the puzzle of moving from decomposition to composition. Hayek underlines the importance of encapsulation in preventing interference, and Lachmann underscores the necessity of abstraction for coordinating action and accommodating change. Hayek's abstract relations are abstraction boundaries.

[14] Lewin (2014) explores this long-lasting and multi-faceted relationship.
[15] Importantly, Hayek's abstract order points to emergence, which is absent in Lachmann. See Lewis (2012).
[16] Hayek (2011:224-225): "The rationale of securing to each individual a known range within which he can decide on his actions is to enable him to make the fullest use of his knowledge, especially of his concrete and often unique knowledge of the particular circumstances of time and place."

We can now see the economic counterpart to decomposition, encapsulation, abstraction, and composition. Decomposition represents the division of labor and capital; encapsulation provides the protected domains of several property; abstractions are the secondary institutions that provide stability at the interface and change on either side, composition is plan coordination – never perfect, but always adaptive.

IV. Conclusion

Both Lachmann and Hayek emerged from the debates of 1930s and 1940s over intertemporal equilibrium, capital theory, and the business cycle with more questions than answers, but both shared a conviction that standard equilibrium approaches were not adequate to task.

They both began to search for answers and beginning in the 1950s their paths started to diverge. Hayek's search turned broad to the sensory order, to complexity, to social and political thought. Lachmann, on the other hand, opted for a narrow but deep search into the works of Ludwig Mises and Max Weber. Interestingly, these diverse strategies led both to examine the institutional order as playing a coordinating role in a world of dispersed knowledge and divergent expectations.

What we have tried to show is that their positions are closer to each other than might first appear. Lachmann building up from the 'micro' world of the plan; and Hayek descending from the 'macro' world of the abstract order end up meeting in the middle – at abstract relations. It is these abstract boundaries that provide the coherence and flexibility necessary for agents to coordinate their plans and adapt to unforeseen change.

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